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THE IMPRESSIONISTS

A new show explores the artists' early works (p. 78)

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Cover: *La Vue du village* (*View of the Village*) was painted by Frédéric Bazille in 1868. His model was the daughter of the family gardener; the village was Castelnau. Fellow Impressionist Berthe Morisot said of the work, "The tall Bazille has painted something that I find very good. . . . There is much light and sun in it. He has tried to do what we have so often attempted—a figure in the outdoor light—and this time he seems to have been successful." It was accepted for the 1869 Salon (p. 78) Musée Fabre, Montpellier, France

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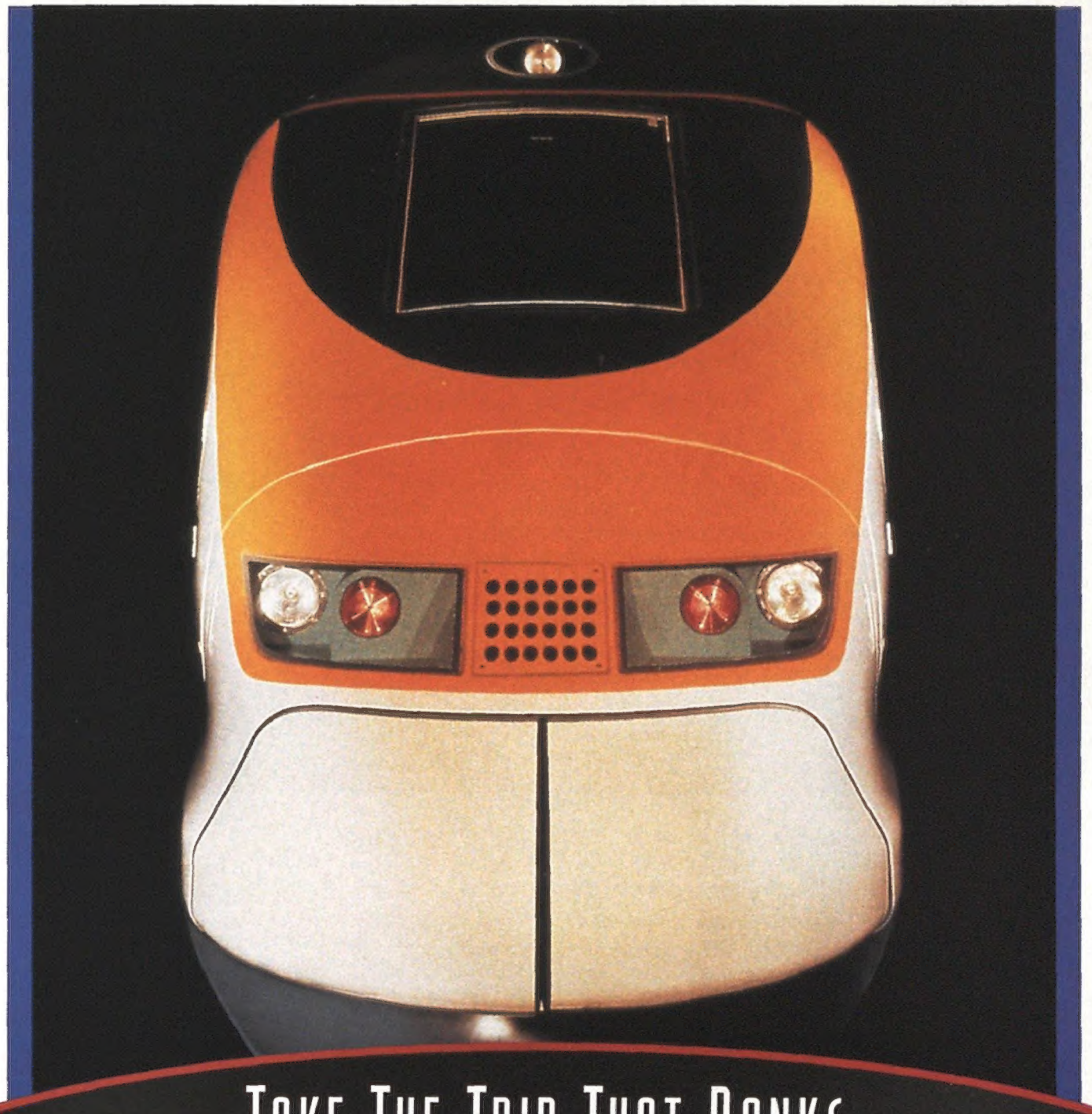

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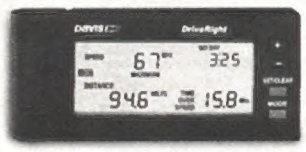

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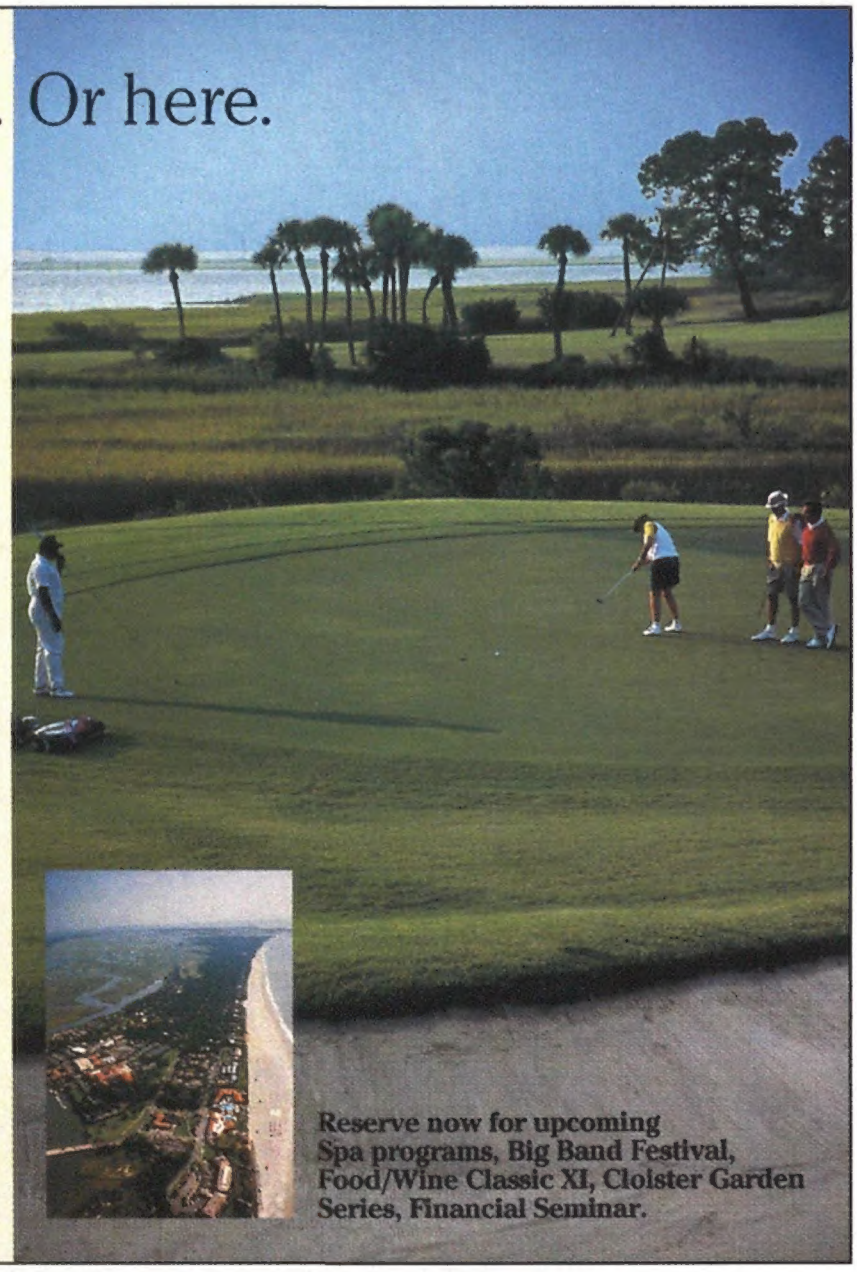

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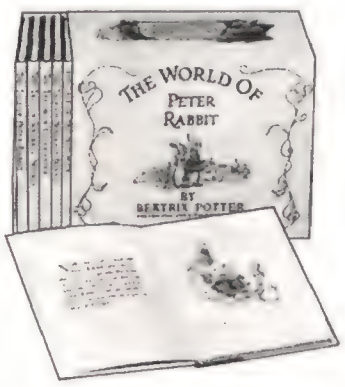

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Secretary Heyman's comments

Smithsonian Perspectives

This column is adapted from I. Michael Heyman's remarks to the Institution's staff and friends during his installation as tenth Secretary on September 19.

Every Secretarial era reflects unique circumstances and poses its own opportunities and problems. At present, resources are relatively short. My recent predecessors until a few years ago could count on a generous Congress and Executive Branch. Public fiscal prospects are bleaker now. Agency budgets are largely capped. Appropriation subcommittees must stay within set limits. While we must argue vigorously for special treatment, realism counsels that we not depend solely on public revenues to grow substantially in the near future. We must work very hard to guard against erosion of our base budget and for adequate resources to fund the heavy future obligations that the Smithsonian, the Congress and the Office of the President have jointly undertaken, such as the completion and full staffing of the National Museum of the American Indian.

This means that the Smithsonian must rely more heavily in the future on private support from individuals and corporations. A systematic effort to increase private support has started well under Secretary Adams. We must enhance that success by working closely with donor groups—ones that already exist and others that will come together in the future especially in support of each of our museums and other major activities. And we must enlarge our connections with the corporate world.

Substantial movement in these directions presents great opportunities to shore up our resource base, but change is also threatening. Many shrink from any identification of the Smithsonian with corporate sponsors. We obviously should not sell the Smithsonian's name; on the other hand, we should not oppose tasteful indications in advertising that the corporate donor supports the Smithsonian. I refer to this because we are working hard to interest corporate sponsors in joining our 150th-year celebration in 1996. If we are successful, the Institution's logo will appear broadly, and the Smithsonian will go public nationally on television and in other media in ways new to us all.

This new era also demands from public (as well as private) organizations increased fiscal accountability. We must use our resources efficiently and intelligently both to husband them and to underscore our credibility to those who provide them—the government and our donors. I believe that frugality also has a positive side. For example, it will require us to agree more specifically than in the past on the dimensions of our mission. The Smithsonian resembles a great public university with a very broadly stated mission: "the increase and diffusion of knowledge." Within this we have centered on three major tasks. First is public education, largely through our exhibitions of art and scientific and historical objects, but also in a host of auxiliary ways—tours, classes, print and audio publications, and lectures. Second is university-like research, primarily in the biological and physical sciences. We also accomplish serious research in the arts, humanities and social sciences, more frequently in relation to organizing exhibitions. The third task is hosting and maintaining at last count 140 million objects (this undertaking leads to the description of us as "the nation's attic").

Generally speaking, we do an excellent job. Most of our exhibitions are well conceived. Each of our museums is in the top groupings of like museums in the United States and the rest of the world. We carry on extensive research programs important for both the creation of new knowledge and the application of knowledge to solve real world problems. We expend considerable resources maintaining our collections.

It is crucial that we sustain excellence in all that we do. If our resource base should shrink, we must be prepared to jettison the less important of our activities rather than reduce all our activities pro rata and thus threaten the excellence of our most important ones. To do this rationally we have to plan, and I expect that a

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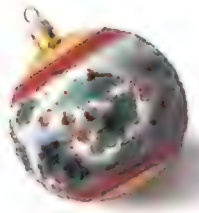

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goodly portion of my time, and the time of my colleagues, will be devoted to shaping a comprehensive plan for the Institution.

Tough financial times, however, ought not to mean institutional paralysis. We must find ways to finance needed new activities. I have two in mind at present.

One is deeper participation by the Smithsonian in the environmental debates raging in this country. My time at the Department of the Interior (and my background in teaching) reinforce my belief that the Smithsonian can convene and preside over conferences that explore both the scientific and the policy issues that surround contemporary environmental disputes. And we can do this in an evenhanded manner, one that involves responsible people on the many sides of issues and that will inform the political debate and give interested people a relatively neutral template through which to make their own judgments.

I see as an important educational role of the Smithsonian the presentation of facts that surround controversial subjects—subjects that are within the circle of Smithsonian activity and expertise. We are all aware that a planned exhibition at the National Air and Space Museum for the 50th anniversary of the ending of the war in the Pacific by the dropping of atomic bombs on Hiroshima and Nagasaki, and the display of the *Enola Gay*, has caused considerable controversy. The Smithsonian could have avoided controversy by ignoring the anniversary, simply displaying the *Enola Gay* without comment, or setting forth only the justifications for the use of atomic weapons without either reporting the contrary arguments or indicating the impact of the bombs on the ground. My view is that the Smithsonian has a broader role than simply displaying items in the so-called nation's attic or eschewing important topics because of the political difficulties created by an exhibition.

The Smithsonian, as a meaningful and responsible public educational institution, should seek to present matters in their full dimension. At the same time, however, we should do our level best to be balanced, especially when we deal with matters that engender serious political controversy. Our viewers should make up their own minds. This is what we are trying to do with the *Enola Gay* exhibition. I believe that our final product, to go on display next May, will properly present the record of what happened, and that it will be the basis for justified national pride in the sacrifices of our veterans, the technical proficiency of our scientists and the productivity of our industries. And this evenhandedness is what I have in mind with environmental topics such as the protection of endangered species.

The second activity, much more massive and potentially important for the Institution, is the development of our capacity to give electronic access to our collections throughout the nation. The technical capacity exists now to record our collections in digital form and to transmit them in on-line computer networks and on disks. Currently, a number of firms are experimenting with like television transmission, although it will take time before substantial numbers of homes can be reached in such networks. In the short run, however, it is probable that transmissions will be broadly accessible to schools; the formal educational opportunities by one-way or interactive systems will become substantial in the near future.

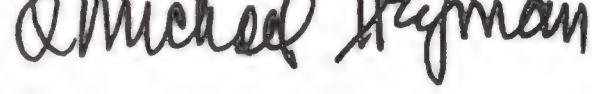
These technological developments will enable the Smithsonian to become truly national. We now share exhibitions through a splendid system of traveling shows, and we obviously share research information through articles and books and on-site work by visiting scholars. Electronic communication, however, broadens our potentialities immensely and at a relatively low cost.

Parts of the Smithsonian are already engaged in these undertakings. I intend to devote considerable time to enhancement and coordination of our present activities. Five years hence, I hope, the Smithsonian (together with the Library of Congress, the National Gallery of Art, and other federal, state and private agencies) will be deeply engaged in this new world of information transmission and sharing. We should be more than the place to visit in Washington; we should also be present throughout the country in a whole variety of ways.

My last observation suggests that the Smithsonian should be working with other institutions in sharing electronic communications. A broad view of institutional interrelationships is another way to enhance and enlarge our effectiveness. Our joint program with Harvard in astrophysics is an example of what I mean. I hope that we will explore deeply its effective emulation in natural history and other of our activities.

There is a third area of prior achievement that deserves our continued attention and energy. The Smithsonian is becoming self-consciously inclusive—more of its exhibitions and activities reflect the art, culture and history of all of our major ethnic strands. We still have a way to go, and we will be paying special attention in the next few years to that large group of Americans of Hispanic origin whose culture has not adequately been represented at the Smithsonian. We do this not to differentiate, but to educate all of us about our origins in a way that will foster a sense of pride and thus counter separation and make more attainable the creation of one set of Americans out of many.

I look forward with pleasure to leading this great cultural and scientific institution.



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Letters to the Editor

Alternative medicine

Dear Sir: Contrary to a statement in your September issue, basal cell tumors are rarely black. Any dark or black growth could be malignant melanoma, which can metastasize rapidly to local and distant sites. To be complacent about such a growth courts deadly consequences; any that appear black should be seen immediately by a dermatologist for diagnosis and, if called for, proper treatment.

Basal cell tumors are usually translucent pearly bumps or small, non-healing ulcers. Many can grow enough in a few months to result in considerable cosmetic deformity and may even metastasize. Participants in the NIH study you mentioned may wish to accept the risk when properly informed about location, size and likely behavior of their tumor.

Bryan C. Schultz, M.D.
Clinical Associate Professor of Medicine (Dermatology)
Loyola University Stritch School of Medicine
Chicago

Those patients referred to the NIH study by their dermatologists had been diagnosed as having low-risk basal cell carcinoma. Ed.

Dear Sir: Dr. Joseph Jacobs won't be around to see some of the fruits of his labor flourish. He has resigned.

Allen Yarinsky
Delmar, New York

Dr. Jacobs says he resigned from the NIH post because Congress was telling him "what to research and how to research it. That was totally inappropriate, as they were not experts." As we went to press, he was considering a position with Yale University School of Medicine. Ed.

Dear Sir: It has been my experience that our medical system's emphasis is on economics, sanitation and drugs, and on solving diagnostic problems. It is not on the patient. What is needed to speed recovery is emotional support that can lessen tension and help cope with pain and depression, which I have found does not exist in our scientifically based system. Caring individuals enter the health care field but are thwarted by the system itself.

I was born in the Philippines. My entire family and I were caught there in World War II, and my first child was born in a civilian internment camp. In the improvised "hospital," we patients had to bring our own mattresses and sheets. There were few medicines and few medical tools, but I watched as patients left, healed by our skilled doctors and nurses administering ample doses of TLC.

Successful alternative methods of healing should include that essential element: healers who listen to, touch and put emphasis on the patient.

Betty Foley
Scottsdale, Arizona

Dear Sir: It was high time that NIH allocated money to look at alternative healing practices, particularly for those who are ill and face the question of using such approaches when traditional medicine has declared them incurable.

Flaviu Cristian
Leucadia, California

Dear Sir: The largest body of alternative health care providers, not only in this country but in the world, are chiropractic physicians.

Have we, after 100 years of trying, become too mainstream to be considered?

Jon J. Godfrey sr., D.C.
Homer, Alaska

Chiropractic medicine is still considered alternative. But now recognized by a number of insurance companies, it is becoming more mainstream. Ed.

Bud Herseth

Dear Sir: The world's finest collection of rare brass instruments is at the Streitwieser Trumpet Museum in Pottstown, Pennsylvania, which hosts a concert series each spring and fall. Numbering over 750, these rare instruments may be played by professionals and serious students under the supervision of the museum's managing director.

James R. Bird
Medford, New Jersey

Dear Sir: In the late 1950s, as a young high school trumpet player, I was persuaded to ride the 15 miles from Appleton, Wisconsin, to little Menasha for a recital by the Chicago Brass Ensemble. I'll never forget Adolph Herseth or tubaist Arnold Jacobs, and the magnificence of that evening in a high school auditorium.

In 1961 a fellow student at the Lawrence Conservatory and I hitchhiked 200-plus miles to Chicago to hear Mr. Herseth perform the Bach Second Brandenburg Concerto in F on the B flat piccolo trumpet.

Robert I. Recker jr.
Orinda, California

Dear Sir: I had the privilege of playing in the Luther College Concert Band with Bud. Even then he was prone to tweak the conductor, Carlo Sperati.

W. A. Ehrman
Tucson

Xerox Palo Alto Research Center

Dear Sir: Chip, chip, hooray! One could have started a stove or turned on heat to the house 30 years ago by picking up a telephone or a radio mike. As to the water heater, in 1934 my parents had installed in their newly constructed home a device that turned on the heater with a button in either bathroom, and another to shut off the power when the desired amount of water was heated for a morning shower.

Maurice Smith
Anacortes, Washington

Dear Sir: Richard Wolkomir's article sent chills up my spine for our future.

What is to become of human judg-

The McCooeys

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ment? Are all decisions to be made for us? Perhaps a chip will be inserted at birth to control behavior.
Martin L. Lewis
Orange, Connecticut

Watson Fellows

Dear Sir: While painting in Europe as a Watson Fellow in 1973, I diverged to unite with family in the Soviet Union for our first reunion in 30 years (my parents were separated from their first-born children by World War II).

The flexibility of the Watson Fellowship encouraged that first reunion—just as it encourages a fellow to explore and test the best of what it means to be human.
Roman Tybinko
Philadelphia

Rare domestic breeds

Dear Sir: The endangered Manx Loghtan breed of sheep is increasing on the Isle of Man. The Manx Heritage Trust is caring for them in three places: the Calf of Man (a small island off the southwest coast), the Grove Museum in Ramsey and the Cregnequash Village Fold Museum. We Manx are proud of this growth from a single pair a few years ago. I am knitting something with the unique wool even now.
Eleanor Gawne
Framingham, Massachusetts

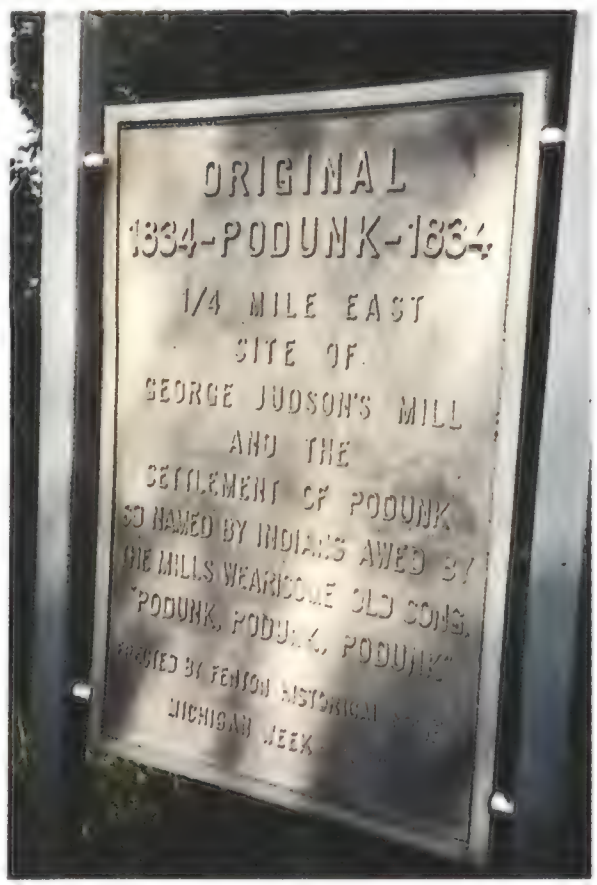
Dear Sir: A purebred herd of White Park cattle is thriving in Nogales, Arizona. According to Tila Escalada, part of Escalada Ranch's herd is descended from Warlord, the White Park bull sent to Canada by Winston Churchill during World War II to ensure preservation of the breed.
Arlene M. Putt
Tucson

Last page

Dear Sir: During the Great Depression my parents, in desperation, moved us back to my mother's ancestral home, a large 1840s farmhouse on a crest overlooking the meadows surrounding Quaboag Pond in East Brookfield, Massachusetts. I, a 5-year-old, attended the one-room Lower 'dunk school, where another lad and I were the entire first grade. My mother had attended the Upper 'dunk School, which by then was a ravaged brick relic surrounded by bushes heavy with blueberries.
Alan Gillies
Tucson

Dear Sir: Here is another Podunk, located in the beautiful Finger Lakes region of central New York State. I travel eight miles to and from work each day on Podunk Road. If I meet three cars, I'm in heavy traffic.
Irene D. Hubbell
Ithaca, New York

Dear Sir: To find the "Original Podunk" Norman Kotker would not ever have to ask for directions. This historical marker [below] sits on Torrey Road in Genesee County, Michigan.
John P. Siler
Grand Blanc, Michigan



Richard Stevens' Duryea

Dear Sir: In today's parlance, Richard Stevens' efforts in copying the 1893 Duryea car were similar to the ancient lost-wax method, which dates back to the Bronze Age.

Modern technology, however, renders his arduous task much easier. In the last issue of *Computer*, a system called the Replicator, *Star Trek*-type, takes a solid structure, analyzes it with computerized axial tomography, then builds up blank models of the different shapes with a computerized casting process. To make molds and casts, or to use these computerized instructions to operate a milling machine to produce the part you want, is straightforward.

Once someone foots the cost of the equipment, you can make almost anything you want of a mechanical nature, having essentially a carbon copy in 3-D.
W. R. Hale, M.D.
Pomona, California

Albert Kahn

Dear Sir: What a delightful surprise to find an article about an architect who is not slavishly devoted to the latest trendy fashion. Albert Kahn felt free to design gritty factories as well as Tudor houses. As a practicing architect who works with existing buildings of all types, I was pleased to see an eclectic designer so honored. Your photographs demonstrate that any type of building, if it is well done, constitutes architecture. After studying the Fisher Building, I'm wondering if maybe Mies van der Rohe's dictum should be changed from "Less is more" to "Less is less."
Michael Alan Finn
Washington, D.C.

Dear Sir: Albert Kahn designed the huge, distinctive University of Michigan Hospital in Ann Arbor which accommodated thousands of patients, and physicians in training, for over 60 years.

It was here that his only son, Edgar, studied medicine and was the hospital's first resident in neurosurgery. He eventually became professor of that specialty and head of the University of Michigan's Department of Neurosurgery.
Austin E. Lamberts
Grand Rapids, Michigan

Dear Sir: I attended Cranbrook School with Bill Kahn, who was Albert's nephew and Louis' son. Our families were good friends, and when I graduated, announcing I wished to become an architect, Louis Kahn gave me *The History of Architecture* by Sir Banister Fletcher. After World War II, I returned to Cornell University, and in my more than 40 years of practice I have retained that present.
William G. Tracy, AIA
Naples, Florida

The tree was like his family journal.

His great-great grandfather, or so the story went, planted it. His mother played in it. And now his daughter was about to get married under it. As a child he'd wondered if the tree itself held them together. But he knew now it was something far greater than that.

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Around the Mall and Beyond

At the 'Gridiron Gala,' a lot of humongous former football players hobnobbed beneath the gaze of the Natural History museum's African elephant in celebration of the NFL's 75th anniversary

Joseph Henry might well have been incredulous. Last month the Institution that he so solemnly directed as its first Secretary put on a big, splashy bash for the 75th birthday of the National Football League. The Smithsonian Associates' "Gridiron Gala" took place in the National Museum of Natural History, partly in the Baird Auditorium and partly in the Rotunda, where the African elephant is accustomed to presiding over such goings-on.

The party was a lot fancier than the rowdy infancy of the NFL. Professional football dates back to the late 1800s, when scratch teams played on gravelly fields and then passed the hat.

Teams sprouted in Ohio, Pennsylvania, upstate New York and the Chicago area. After the great Jim Thorpe signed on with the Canton, Ohio, Bulldogs in 1915, pro games began drawing crowds. Five years later, owners and representatives of a few teams met in a Canton automobile showroom, and the American Professional Football Association was born with Thorpe as president. It soon changed its name to the National Football League and slowly gained status, though about all it could offer its players, besides lots of train travel, were a jersey and a pair of socks. Practice sessions took place alongside the train tracks when the engine stopped for water.

Other leagues were attempted in those early days, but the NFL ruled alone and still does. The boisterous challenge of the American Football League, organized in 1959, ended a decade later when the leagues merged.

The NFL's 75 years are rich with anecdotes, and as you read this, the Smithsonian Associates in collaboration with the NFL are putting on a five-part lecture series crammed with fascinating memories, many of which have been recorded in the fine book, *75 Seasons: The Complete Story of the National Football League.* Those lucky enough to get tickets are making friends with some of football's great stars and personalities—Bart Starr, Gene Washington, Chuck Noll, Tex Schramm and many others.

I talked to a couple of the participants. I chose Boston columnist and broadcaster Will McDonough because all sports writers overflow with untold stories. And I chose former Congressman and Cabinet member Jack Kemp because he's here in Washington, where everyone seems to have forgotten that he once was a hell of a quarterback, first drafted into the NFL, then playing in the new AFL.

At Kemp's office, I was whisked into a pleasant inner room, and there was Jack Kemp on the phone.

He waved me toward a chair, but I wanted to stand and squint around at a Dartmouth College poster and other memorabilia. I counted at least four footballs, two of them well covered with signatures. Finally, he came over to sit beside me on the couch. He was not a huge man, but he was still well-muscled and hard-bellied.

Kemp was born in 1935 in West Los Angeles, where his boyhood interest in pro football must have seemed odd. The NFL was still youthful, some teams still moving from city to city like vaude-

Buffalo Bills quarterback Jack Kemp, No. 15, hurls a pass during the 1965 AFL all-star game. Kemp was a gridiron giant in the league that challenged the NFL.

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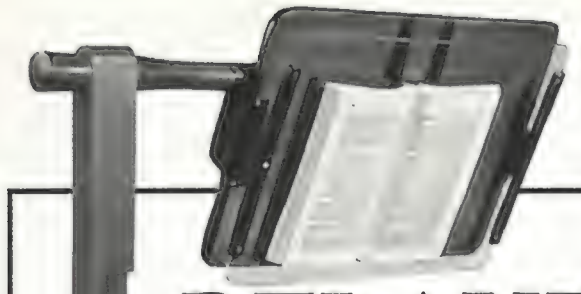

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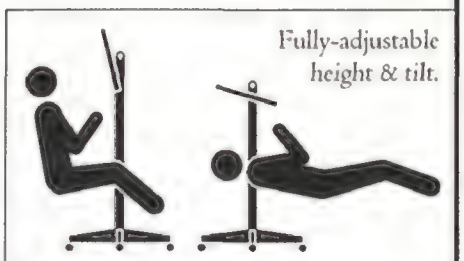

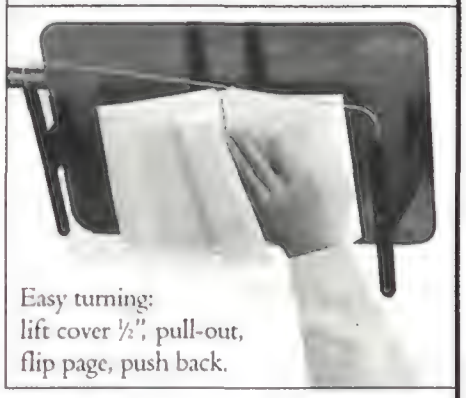

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ville troupers, often playing on baseball diamonds lined off across infields.

"I idolized Bob Waterfield back when he threw passes at UCLA, and later joined the L.A. Rams. I used to get a cheap seat at the L.A. Coliseum to watch the guys earn their five or six thousand a year. I knew then I wanted to play pro football." Kemp stared at the ceiling, suitcoat off, relaxed.

"I wasn't big enough to play football at UCLA or 'SC, so I went to little Occidental College, played quarterback, grew up, lifted weights, had good seasons and got drafted in 1957 by the Detroit Lions. They traded me to Pittsburgh." That started a four-year trek through NFL teams and once up to the Calgary Stampeders of the Canadian Football League—a lot of practice, but no play. "I'd been just hanging on by my fingernails," he told me. It was the new AFL that finally grabbed him and put him on the field—quarterback of the Chargers.

He joined the Buffalo Bills after an injury. "I hit a helmet with my passing hand and dislocated a finger so severely that I had to literally decide what shape I wanted it in. So I put my hand on a football and they put a cast over it." In those days football was pretty Darwinian. "We'd do anything to survive."

I glanced at the finger. Yep.

I asked him what kind of talk goes on when a quarterback gets sacked by some mountainous defensive tackle. Football is played by all kinds, some good folks, some not, he explained. "Some are trash talkers and some are gentlemen who'll pick you back up, then beat the hell out of you next time." He told a story of Ernie Ladd, a huge Charger lineman—6-feet-9 and probably 300 pounds—who was a good friend when Kemp played there.

"Then I went to Buffalo, and we played the Chargers. I threw an interception, and found myself in the position of a tackler. And Ladd was suddenly a blocker, bearing down on me and blotting out the sun. I was just imagining what he could do to me. I did not wear knee pads, thigh pads, hip pads or any other pads on my body except little postage-stamp shoulder pads.

"Just about the moment that he was going to take me out, the tackle was made. I sighed a breath of relief and started off the field. Then a giant hand patted me on the tokus, and there was Ernie Ladd's voice in my ear: 'Now

Jackie, you be careful out here. You might get hurt someday.'"

As a veteran of both leagues and former president of the AFL players union, Kemp knows football like the back of his football-curved hand. He's seen lots of changes ("I don't go for all this jiving around in the end zone after a score"), and he believes the game can be made to accommodate TV more gracefully than it used to. "We're finally speeding things up, with more signal calling instead of huddles. I don't know about a coach speaking directly to a quarterback through a headset in his helmet—I always called plays myself."

Kemp's two sons have kept the faith. Jeff, the one who went to Dartmouth, played for the Rams, 49ers, Seahawks and Eagles. He's now retired. Young Jimmy is in the Canadian League. "I watched their games," says Dad. "I'll always watch football, no matter what."

"You talked to Kemp?" asked Will McDonough when I met him. "Hey, I once wrote something about him when the Patriots beat Buffalo in a preseason game back in '64. Kemp kept his Buffalo team to a running game, and I led my story by saying something like 'Jack Kemp, who recently announced that he might run for Congress as a conservative Republican, played that way yesterday against the Pats, blah, blah, blah. . . .'

"Months later, the two teams played in Boston for the championship of their division. The game was so big that Fenway Park sold out in a snowstorm. Kemp played a great game and the Bills won. I went to the locker room, and Kemp—who'd just won the championship—instead of shouting and hugging his teammates, is looking at me and wants to argue about something I wrote months ago. 'What do you mean I'm a conservative Republican?' he says. We've been friends ever since."

McDonough has a voice and a face right out of South Boston, which is more Irish than Dublin. A historian of sports writing, he noted that the early pro teams sometimes paid all expenses for writers to come and cover games. "But Boston's never been a great football city. Teams are always leaving this town. The Redskins went to Washington, the Boston Yanks ended up in Indianapolis. Funny thing, though, the small local teams in the 1940s—the South Boston Chippewas and the East Boston Merchants—would outdraw the NFL."

Remember, pro football didn't really take off until that wonder game of 1958 between the Baltimore Colts and the New York Giants. They went into overtime, and the Colts won, and so many of those guys went into the Hall of Fame—Unitas, Berry, Marchetti, Donovan, Robustelli, Huff, Gifford and Rosey Brown, among others. That turned pro football around.

That game was televised and gained a vast audience. And as the new medium took over, Will saw and recorded one of football's changes. "I used to keep stats," he told me. "Before TV, a game would average about two hours and 30 minutes. With TV, it was up to half an hour longer."

It's also a lot more disciplined. Will's favorite story goes back to 1962 when the Boston Patriots sold out Braves Field for a night game with the old Dallas Texans. "It came down to five seconds left with the Pats ahead, and the crowd swarming around the end zone like college kids. The Texans' 'Cotton' Davidson tried one last pass to win for Dallas. Chris Burford was open in the end zone, but the ball never reached him and the Pats won.

"And Davidson ran over to the sidelines screaming 'Coach! Coach!' (The coach was Hank Stram.) 'We got robbed! A guy in a raincoat knocked the ball down!' They ran a film of it later, and sure enough, here's this fan in a raincoat running into the end zone, batting away Cotton's pass, then dashing off the field, so the Pats win."

Good old Boston. Good old football.

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Phenomena, Comment and Notes

The agribusiness approach to coffee-growing in Mexico is shutting out campesinos, such as the Tzotzil Indians, and destroying the biodiversity migratory birds require

Gunshots shattered the peace of the Ocosingo night. It had been three days since the Zapatistas marched into the town square, and the fighting raged on around us as we huddled in our darkened house. On New Year's Day 1994, the research we had been conducting for more than four years on migratory birds in the southernmost Mexican state of Chiapas ground to a halt. The subsequent lull in the work has given me plenty of time to think about connections between the social upheaval in Chiapas and the loss of our migratory birds and other forms of life dependent upon forests. As I sipped my morning cup of coffee, one connection became clear. The connection is coffee.

The uprising came four and a half years after the collapse of the International Coffee Agreement (ICA), which sent producer prices of coffee plummeting to their lowest level since the Depression, and five years after the inauguration of the Salinas Administration, which has reduced programs that support small coffee farmers. Because of its high profitability compared with the raising of corn or beef, coffee-growing had been seen as a way for small landowners to obtain cash with relatively little investment, and coffee-plantation area nearly doubled in Mexico over the past two decades. Traditionally, coffee has been a relatively democratic crop. However, the simultaneous reductions in prices and subsidies, credit and other forms of support have dashed the expectations that had grown with rising prices. Even when coffee prices rise again, as they have done lately, the specter of continued price swings can only dampen the optimism of growers.

The coffee crisis did not cause the uprising in Chiapas, but it has certainly contributed by increasing the misery of small landowners. As I write this essay, a peace proposal that includes more social spending and land reform has been drafted. Without addressing the question of how small farmers can make a decent living, however, the long-term prospects for true peace remain dim. Coffee production still offers promise for campesinos if done in an ecologically sustainable and profitable manner.

The disruption caused by the coffee crisis to the lives of the rural poor is now bitterly apparent. But what may be less well appreciated is the long-term effect that the coffee crisis will have on hemispheric bird migration, as well as

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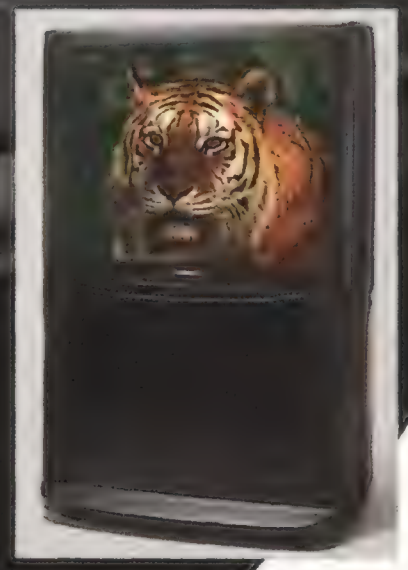

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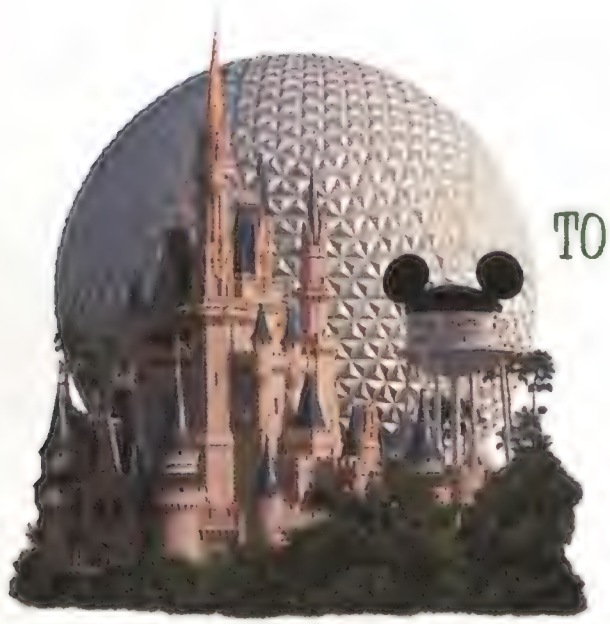
the overall diversity of life in the Tropics. Based on our work in Ocosingo, we find that traditionally managed "shade" coffee plantations, characteristic of the communally owned lands known as *ejidos*, support many more species of birds than do cattle ranches, a land use of the rich and powerful that covers more than half of the state and is rapidly growing. At least 180 species of birds can be found in the coffee plantations of Ocosingo—a number exceeded only by undisturbed tropical forest. Migrant densities are particularly high, and species dependent upon forest are often found only in the shade of a coffee plantation. In fact, researchers throughout the Tropics have concluded that the loss of traditional growing techniques could have a serious impact on the survival of forest-loving migratory birds.

Our research on coffee plantations is part of a larger study of how birds use both natural habitat and agricultural lands in southern Mexico. We have found that areas cleared of their original forest are often left with small patches of woods. These usually support greater diversity and numbers of migratory birds than agricultural land, shrubby second growth or natural forest itself. Of all the managed forest patches in Mexico, shade coffee plantations are particularly important for birds.

To appreciate the role that coffee plays in the protection of biodiversity and soils, it's necessary to understand how coffee is grown. Rather than consisting of neat lines of shrubs (as is sometimes shown in TV coffee ads), coffee plantations usually look much messier—more natural. They're the kind of places that provide niches for many tropical organisms. Coffee growers often use traditional techniques developed for the cultivation of cacao (the source of chocolate), techniques dating back to pre-Columbian times. Coffee plantations can range from cleared or thinned patches of native forest to a diverse mixture of planted trees and up to 40 other species of useful plants.

Coffee unites the Western Hemisphere in many ways. There is the obvious economic tie between producer and consumer. Coffee is the second-most important legal commodity in generating foreign exchange for developing countries—second only to petroleum. It remains our most important legal import from Latin America. Furthermore, temperate and tropical ecosystems are bound together by the migration of billions of birds each year—and coffee plantations play a key role. Recent reports of declines in migratory bird numbers have scientists and others deeply concerned. Not only do migratory birds provide a spectacular display of beauty each spring when they arrive back from the Tropics, they also perform largely unstudied and unappreciated ecological services: control of forest insect populations and dispersal of the seeds of shrubs and trees. The loss of plantation habitat will only further contribute to the loss of these feathered ambassadors.

The concern isn't only about protecting birds. Researchers working on groups as diverse as insects, amphibians, trees and orchids have found that coffee plantations often serve as a critical refuge for rare species. Furthermore, shade coffee has certain long-term environmental and human health values that are not factored into producer prices. Because the growing of shade coffee retains natural canopy cover of trees, which add nutrients to the soil, and farmers often incorporate natural mulch, it is a relatively benign use of delicate tropical soils.



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Now the shade coffee plantation is rapidly becoming an endangered ecosystem. In many areas, plantations are being ignored or degraded—the shade trees chopped down for desperately needed fuel wood. In other areas, small coffee farms are being converted to other uses, such as cattle ranches, and their ecological services lost. But "technification" is the largest threat to remaining coffee-growing lands.

Technification, initially introduced to combat coffee-bush diseases, has taken on a life of its own. It consists of converting to more-productive varieties of coffee that require no shade. Canopy trees are cut down. "Sun" coffee plantations no longer mimic natural forest structure and therefore support a much lower diversity of birds and other organisms. Furthermore, sun coffee requires much more chemical input. Because of this, coffee modernization tends to occur on larger farms, where landowners have more capital and easier access to credit. In addition, sun plantations lack large trees with their protective canopy and deep roots, and are therefore much harder on long-term soil productivity than are traditional shade plantations.

The shift in coffee production to fewer, larger farms is a familiar story in the history of agriculture. In part, this march to modernize has been subsidized by the United States, which in the Caribbean region has supported technification to the tune of at least $80 million in aid. Coffee production is losing its traditional roots and being increasingly forced into the mold of modern agribusiness. This may be in keeping with current notions of free trade and may even make coffee production more competitive in the global market. Despite the collapse of the "coffee cartel" that propped up prices in the face of overproduction by warehousing coffee, as well as the continued efforts to modernize production, the amount we pay at our local supermarket is only 10 percent less now than before these events. And the prices have jumped for the specialty coffees many of us have grown to love.

Many of the long-term costs of technification, both social and environmental, are left out of the equation. As recent events in Chiapas show, the social cost may become more and more visible to North American consumers. What may continue to go unnoticed is the loss of refuges for migratory birds and a host of as yet undescribed tropical forest organisms.

Luckily, many coffee drinkers go out of their way for quality. Specialty shops are sweeping the country. Shade-grown coffee has an edge here: it is not only environment-friendly, but I am assured by professional tasters that the shade-grown bean brews a tastier cup as well.

Clearly, it's time to wake up and smell the coffee. Even the hot beverage you enjoy has global ramifications. Here's something to ponder when you pour your next cup: Would you be willing to pay a few pennies more per cup for coffee grown in a socially responsible and bird-friendly manner? Such a premium would undoubtedly be small, because the price paid to coffee farmers is a fraction of the price you pay at a shop. It would be good value, for the beneficial impact on tropical biodiversity. As yet there is no coffee on the market guaranteed to be from a shade plantation, but I suspect there will be soon. Then each of us will be able to choose between sun and shade.

Russell Greenberg, Director
Smithsonian Migratory Bird Center
National Zoological Park

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All the Places to Love
by Patricia MacLachlan,
illustrated by Mike Wimmer

The Shepherd Boy
by Kristine L. Franklin,
illustrated by Jill Kastner

A Ruined House
written and illustrated
by Mick Manning

From Norway's mountain fastnesses to the canyons of Navajo country, these books will transport children—anywhere

On a hilltop in Vermont stands a white frame house. The prospect from that farmstead, of meadow and upland and birch forest, is fine. And over the cottage threshold, on a lintel embellished with a flowing script, carefully hand-lettered, are inscribed the words "This is the house that books built."

That simple retreat, beautiful in spare New England style, was, for many years, the country house of Ingri and Edgar Parin d'Aulaire. The d'Aulaires were, of course, the singularly gifted author-illustrators, creators, by the score, of timeless children's books. Their titles—among them, the picture-biography of Abraham Lincoln (winner of the Caldecott Medal in 1940), the unsurpassed *Greek Myths* and *East of the Sun, West of the Moon*, a lilting compendium of Norwegian folktales—have captivated generations of American children.

A number of their books—nine, to be exact—are still in print, classics that make for perfect gifts, each and every year. And *Leif the Lucky*, their antic account of Leif Eriksson's seafaring adventures, will be reissued next month by Beautiful Feet Books.

More than 20 years ago, as a friend of the d'Aulaires' then college-age son, Nils, I often was welcomed as a visitor to their farm. The narrow road winding up the hill was virtually impassable in winter. More often than not, one abandoned the car in a friendly drift and toiled toward the farmhouse lights, sinking knee-deep into snow. The trek was worth it, for inside one found Inga and Edda (as they were known to fami-

ly and friends)—and meatballs and chive omelettes and hot tea before a roaring fire, and laughter and talk of the newest work-in-progress.

At that time, they were laboring fiercely over *d'Aulaires' Trolls*, which would appear in 1972, lauded by the *New York Times* as "a nearly perfect picture book." *Trolls*, a title deserving a place on every child's bookshelf, bears all the signature touches of a d'Aulaire production: Inga's poetic verve and inimitable wit, Edda's sense of drama, and the lithographs, bold and droll and rooted in Scandinavian folk art.

"In the old days," the book begins, "when only narrow, twisting paths wound their way through the moss-grown mountains of Norway, few human beings ever set foot there. The mountains belonged to the trolls, who were as old and moss-grown as the mountains themselves.

"There were many kinds of trolls: mountain trolls, forest trolls, water trolls, trolls with one head, trolls with three heads, trolls with twelve heads. Most of them were bachelors and lived by their lonely selves; others had wives, who were as ungainly as their husbands. Some kept cats, large black troll-cats with gleaming eyes. They had troll-cocks too, with green and purple feathers. And in their stables, deep in the mountains, stood their troll-steeds; they were huge and so fierce that flames spurted from their nostrils."

d'Aulaires' Trolls
written and illustrated by
Ingri and Edgar Parin d'Aulaire

Clockwise from top left, that's Jack Daniel, Jess Motlow, Lem Tolley, Frank Bobo and Jess Gamble. (Jimmy's in the middle).

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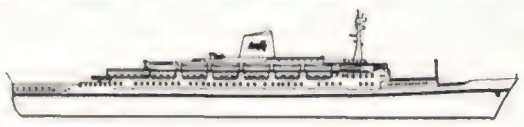

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To create such a book, the pair worked with painstaking care. These were perfectionists at their appointed task: each color drawing was first completed on sketch paper. Then the exacting color-lithography preparation began. (Eventually, their elder son, Ola, would be entrusted with some of this work.) The d'Aulaires eschewed the use of a camera, a standard tool among lithographers today, for work by hand. Using 200-pound stones as their canvas, they traced each image with a beeswax crayon onto the limestone surface. They repeated the process again and again, rendering, for each image, a separate stone for each of four colors—black, red, blue and yellow.

Silence reigned, I soon learned, when Edda sat before a west-facing window in the afternoon sun, drawing on stone. The medium is unforgiving—erasure is impossible—but the effects achieved, in the form of images remarkable for their subtlety and richness, made legends of the d'Aulaires.

Each completed page, each polished illustration, was the result of many days' work. "You must be a bulldog and stick to it," Inga once observed. "Once you have started on a book, finish it. This is where a team of two works so well. When one is down, the other is up. We may rewrite our text 10 to 20 times before we are both satisfied, and hundreds of sketches end in the fireplace before the drawings are executed."

In a collaboration that spanned five decades, from *The Magic Rug* in 1931 to *The Terrible Troll Bird* in 1976, the d'Aulaires made picture books rooted in two traditions. Many titles, *Ola* and *Children of the Northlights*, for instance, drew on Inga's idyllic childhood in Norway. Others—*Abraham Lincoln, Buffalo Bill, George Washington*—brought to life figures looming large in the imagination of their adopted America.

As they set out to begin work on their celebrated *Abraham Lincoln*, the couple traveled deep into the country they had come to as immigrants in 1929. "We wanted," Inga would recall, "to try to make a wonderful man come alive for children, keeping all of his humility, gawkiness and greatness. We followed the Lincoln path and pitched our tent wherever he had been staying, to smell the same flowers, be bitten by the same bugs, and have the same thunderstorms burst over our heads."

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Nanny Fox
by Georgie Adams,
illustrated by Selina Young

sketchbook and notepad in hand, stood the d'Aulaires in great stead over the years. When, in the 1960s, they turned to the Greek myths, the couple clambered over the stones of Delphi, imagining gods, nymphs and satyrs peering out from the ruins. And during the mid-'30s, when they prepared their peerless collection of Norwegian folktales, they returned to "a little farm in Norway that lies far up on the hillside. . . . Up here in the loneliness we lived during the light summer, during the dark winter, when the light of the moon glittered on the snow, and here we walked around in forest and fields and made sketches for these illustrations."

At the outset of their careers together, when they met as art students in Munich, they may have seemed an unlikely match. Edda, the only son of a noted Italian painter and an expatriate American mother, grew up in cities across Europe, shuttled between two divorced parents. He was pensive, driven, intense, a wiry young man with flashing dark eyes. Inga, tall and blonde and merry, was the youngest, much cosseted, daughter in a large and raucous family. She grew up not in quiet but cheerful clatter, accustomed to a household brimming with children and animals. And cousins or aunts or someone always setting off for mountain walks or ski expeditions.

They seemed to have recognized, though, that they were kindred spirits, for they were married almost as soon as they met, in 1926. Within three years, the newlyweds were bound to America to seek their fortune. The early years were in fact a period of hardship, although Inga described their struggling-artist days with a twinkle in her eye. "Poor!" she would exclaim, settling into an armchair to enjoy the tale herself. "Poor as the poorest little field mice. So poor that, in Brooklyn, I would creep down at

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By the Dawn's Early Light
by Karen Ackerman,
illustrated by Catherine Stock

the end of the day to the butcher whose shop lay beneath us. And each night I would inquire, so very politely, 'Do you have any scraps for the cats?' And each night I would creep back up the stairs, taking away a little bundle of meat." "Of course," she would add, "we were too poor even to keep any cats." (She was a wonderful cook, and no doubt concocted a tasty dish from those very morsels.)

Inga and Edda did venture from Brooklyn into Manhattan, portfolios in hand, attempting, day by day, to interest publishers in their work. At last they met a sympathetic editor at Viking and the first of their books came to be. Their final book, *The Terrible Troll Bird*, completed for Doubleday in a race against the blindness that would overtake Edda, appeared in 1976. Inga died in 1980 at age 76, Edda in 1986 at 88, leaving behind them the rare and wonderful books. Their stories will remind children always that there is a world where goodness triumphs and darkness can be dispelled by merriment and pluck.

This year's children's books are heir to that tradition, transporting young readers to the realm where we seek out what is truest and best in our natures. A book, as always, invites passage to provinces imaginary and real. This season, we can open the pages to a village "in the old country," where tiny panthers grow from the shoots of a magical potted plant, or a corner of mythical rain forest, where a girl intuits the secret language of birds flitting in the trees. Writers dwelling in fact offer equally compelling sojourns, into a summer, in 1942, touched by the shadow of war, and into the ancient world, where one man dreamed great dreams from the scholarly sanctuary of the library at Alexandria.

Knoxville, Tennessee by Nikki Giovanni, illustrated by Larry Johnson (Scholastic, $14.95) The distinguished poet's evocation of church picnics and just-picked corn, old friends and gospel music, during childhood summers spent with her grandparents. The sun-suffused paintings are memorable indeed.

Sherman the Sheep by Kevin Kiser, illustrated by Rowan Barnes-Murphy (Macmillan, $14.95) Whoever started the rumor that sheep are dimwits? You'd revise your attitude if ever you encountered Sherman, "smartest in the valley and maybe the whole world," who pulls the wool over his own flock's eyes.

Amber on the Mountain by Tony Johnston, illustrated by Robert Duncan (Dial, $14.99) Living isolated on a peak that "poked through the clouds," a young girl seeks out a friend who teaches her to read. A tale of perseverance and generosity that deserves to be treasured year after year.

The Fabulous Fireworks Family written and illustrated by James Flora (McElderry Books, $14.95) The sights and sounds of fiesta day in a village, centered around a family who creates "the finest fireworks in all Mexico." The jaunty text offers an excursion into a world touched by holiday brio.

Billy Beg and his Bull retold by Ellin Greene, illustrated by Kimberly Bulcken Root (Holiday House, $15.95) A beloved Irish folktale, touting the bravery of a lad who vanquishes giants so fierce "their roars shook the apples from the trees, and rattled the horns on the cows."

Into the Jungle by Judy Hindley, illustrated by Melanie Epps (Candlewick, $14.95) How to look and listen in a green world where "tigers weave their tracks among the trees." The search for wild creatures, cleverly camouflaged on every page, will beckon young readers to pore over every detail.

Too Tired by Ann Turnbull, illustrated by Emma Chichester Clark (Harcourt Brace, $13.95) As if Noah didn't have enough on his mind: the Ark's about to embark. But where are those sloths—snoring away, can't be bothered to join the contingent of two by two. Suspenseful, larky, and one of this year's most winsome offerings.

A Quiet Night In written and illustrated by Jill Murphy (Candlewick, $12.95) Mr. and Mrs. Large, stalwarts of the elephant family, plan to tuck the children in early and dine by candlelight. Somehow, that plan seems doomed to go awry, in a fetching tale for tired parents everywhere.

Ruby's Storm by Amy Hest, illustrated by Nancy Cote (Four Winds, $14.95) An unflappable granddaughter, "pushing back the wind," braves an afternoon squall to reach 88th Street. At her grandfather's apartment there's always a pot of hot chocolate and a checkerboard waiting.

Little Rabbit Goes to Sleep by Tony Johnston, illustrated by Harvey Stevenson (HarperCollins, $15) For all little rabbits who "cannot sleep" when the "night is big and dark," a bedtime story to be read and cherished in the pale moonlight.

Tick Tock Tales: Twelve stories to read around the clock by Margaret Mahy, illustrated by Wendy Smith (McElderry Books, $16.95) A resourceful sailor who adopts 20 orphans, a poodle who perfects the art of passing for a mutt. Inventive, whimsical stories, each one is the perfect length for reading before bedtime.

The Farm Summer 1942 by Donald Hall, illustrated by Barry Moser (Dial, $15.99) His father bound for the Navy, his mother called to war work, a 9-year-old boy crosses the country to spend a summer with his grandparents in New Hampshire. Absolutely the outstanding title for 1994, the result of a collaboration between the renowned poet and a master illustrator.

Aria by Peter Elbling, illustrated by Sophy Williams (Viking, $13.99) A lone-

The Bear and the Bird King
retold and illustrated
by Robert Byrd

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ly girl, divining the secret language of "parrots, macaws, and other multi-colored birds of the wild," helps her winged companions to elude the hunter's snare. A transcendent tale of compassion rewarded.

The Frog Princess, A Russian Folktale retold by J. Patrick Lewis, illustrated by Gennady Spirin (Dial, $15.99) Into the Kingdom Beyond Blue Kingdoms, testing ground of Prince Ivan and his bride Vasilisa, who "lived and lived, and barred the door against misfortune." Lissome watercolors from Russia's foremost illustrator.

Cannonball Simp written and illustrated by John Burningham (Candlewick, $15.95) From the distinguished British author, the saga of "what most people would call an ugly little dog," Simp by name, who finds her fortune as a circus star. Originally published in 1966, this reissue will introduce the author's bold, Expressionist-influenced style to a new generation.

By the Dawn's Early Light: The Story of the Star-Spangled Banner by Steven Kroll, illustrated by Dan Andreasen (Scholastic, $14.95) A spirited voyage into the life and times of Francis Scott Key and his creation of our national anthem. The oil paintings glow with the light of history brought to life.

Nanny Fox by Georgie Adams, illustrated by Selina Young (Atheneum, $13.95) Upstart Arnold Fox, who "loved chickens, not to eat—just as friends," deserts his carnivorous family and wins the heart of everyone inside the coop. Good-natured and witty, this story will stand up to many a reading.

Lyle at the Office written and illustrated by Bernard Waber (Houghton Mifflin, $14.95) Sharpening pencils? Dispatching memos? All in a day's work, and delivered with a very toothy grin. Hightail it to your bookstore: a new escapade from Lyle, that clever crocodile, is cause for celebration indeed.

The Last Train written and illustrated by Kim Lewis (Candlewick, $14.95) In the windy hill country of the author's Northumberland farm, children conjure up the phantom of a steam train, "huge and puffing, swift and mighty," in a field where a railroad line once ran. Another entrancing title from the creator of *Floss.*

All the Places to Love by Patricia MacLachlan, illustrated by Mike Wimmer (HarperCollins, $15) On the day his sister is born, a boy meditates on the places—blueberry hill and marsh, barn and fields—he will show her. A true keepsake book from the author of *Three Names* and *Sarah, Plain and Tall.*

Truman's Aunt Farm by Jama Kim Rattigan, illustrated by G. Brian Karas (Houghton Mifflin, $13.95) A pixillated, puckish fantasy: What would happen if you ordered ants and got aunts instead? Homage to a most indispensable category of relative.

Sanctuary: The Story of Three Arch Rocks written and illustrated by Mary Ann Fraser (Henry Holt, $15.95) A page-turning account of two pioneering naturalists who, in 1903, braved daunting conditions to document the seabirds and mammals on rocky outcroppings off the coast of Oregon. Their efforts resulted in the establishment of the first wildlife sanctuary on the West Coast.

The Farm Summer 1942
by Donald Hall,
illustrated by Barry Moser

Moony B. Finch, the Fastest Draw in the West written and illustrated by David McPhail (Western, $12.95) Another splendid adventure from the supremely talented McPhail, this time featuring a boy "who could draw so well that sometimes what he drew became real." No aspiring artist should be without this book.

A Ruined House written and illustrated by Mick Manning (Candlewick, $14.95) In the north of England, an abandoned 16th-century stone farmhouse today stands as a haven for barn owl and bat: an outpost full of life. The watercolors, at once accurate and intuitive, invite loving inspection of each crack and crevice.

Down at Angel's by Sharon Chmielarz, illustrated by Jill Kastner (Ticknor & Fields, $14.95) Drawn from the author's South Dakota childhood, a recollection of the "run-down house" where a gifted Bulgarian woodworker crafts hand-hewn furniture. A resonant tale of kindness received and returned and of one memorable Christmas Eve.

An Edible Alphabet written and illustrated by Bonnie Christensen (Dial, $14.50) Blueberry to fig, sunflower to zucchini, a romp in the kingdom botanical. The handsome woodcuts make for a classic.

Aunt Lilly's Laundromat written and illustrated by Melanie Hope Greenberg (Dutton, $13.99) In Brooklyn, sorting and washing, ironing and folding: a job well done by a woman who has "never, ever lost a piece of clothing, not even a sock." A book, as the author writes, dedicated to "the dignity of hard workers everywhere."

Josepha: a prairie boy's story by Jim McGugan, illustrated by Murray Kimber (Chronicle, $11.95) A tale of friendship forged in a one-room schoolhouse, set on the Great Plains in 1900. The paintings vivify a luminous and windswept world.

The Librarian Who Measured the Earth by Kathryn Lasky, illustrated by Kevin Hawkes (Little, Brown $16.95) An absorbing excursion into the ancient world, recounting the intellectual odyssey of Eratosthenes, the genius geographer who calculated the circumference of the Earth 2,000 years ago.

Aunt Skilly and the Stranger by Kathleen Stevens, illustrated by Robert Andrew Parker (Ticknor & Fields, $14.95) A wily mountain woman snatches her quilts, crafted with "stitches small as the wings of a firefly," from the clutches of a thief—aided by her trusty gray goose, Buckle.

Ten Small Tales retold by Celia Barker Lottridge, illustrated by Joanne Fitzgerald (McElderry Books, $15.95) Foxes are outwitted and sage old porcupines offer good advice in nursery stories gleaned from Malaysia to Russia to central Africa, cunningly recited.

It Was a Dark and Stormy Night written and illustrated by Janet and Allan Ahlberg (Viking, $13.99) A rollicking caper, starring a band of Italian brig-

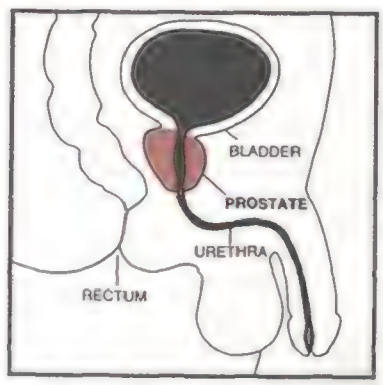
"I'm stopping to go to the bathroom more than ever now. I wonder what's wrong with me."

Your urinary symptoms may be caused by a condition called benign prostate enlargement or BPH. BPH is not cancer and does not lead to cancer, although the two conditions can exist at the same time. Remember, only a doctor can evaluate your symptoms and their possible causes.

Is this you?	Yes	No
Do you get up more than once or twice a night to urinate?	☐	☐
Do you often have sudden, uncontrollable urges to urinate?	☐	☐
Do you have a hesitant or slow urine stream?	☐	☐
Do you have a frequent need to urinate?	☐	☐

If you answered yes to even one question, tell your doctor.

Today, symptomatic BPH can be treated by your doctor in several ways. The options are monitoring the condition with regular checkups, surgery, or oral medicines. One oral medicine is PROSCAR, the only prescription medicine for the treatment of symptomatic BPH that can shrink the prostate.



The prostate surrounds part of the urethra, the tube that carries urine from the bladder. As the prostate enlarges, it can squeeze the urethra and cause urinary problems.

PROSCAR works by blocking a hormone that can cause the prostate to enlarge. *But it is important to know: PROSCAR doesn't work for everyone. Although the prostate may shrink, there may not be an improvement in urinary symptoms. However, in clinical studies with PROSCAR, some men have seen an improvement in their urinary symptoms after 2 weeks. Others have found that PROSCAR took up to several months to help them.* Because all men are different, you and your doctor will need to determine how PROSCAR is working for you.

If you have any urinary symptoms, see your family doctor or a urologist soon, and ask about PROSCAR. For free information to help you discuss your symptoms with your doctor, call 1-800-579-3762.

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Please see patient information on the next page.

J4PO46(302)-MKP4030-3762

PATIENT INFORMATION ABOUT PROSCAR® (Prahs-car)
Generic name: finasteride (fin-AS-tur-eyed)

PROSCAR is for the treatment of symptomatic benign prostatic hyperplasia and for use by men only.
Your doctor may prescribe PROSCAR if you have a medical condition called benign prostatic hyperplasia or BPH. This occurs only in men.

Please read this information, as well as the leaflet which accompanies your medication, before you start taking PROSCAR. Also, read the leaflet each time you renew your prescription, just in case anything has changed. Remember, this leaflet does not take the place of careful discussions with your doctor. You and your doctor should discuss PROSCAR when you start taking your medication and at regular checkups.

What is BPH?
BPH is an enlargement of the prostate gland. After age 50, most men develop enlarged prostates. The prostate is located below the bladder. As the prostate enlarges, it may slowly restrict the flow of urine. This can lead to symptoms such as:

- a weak or interrupted urinary stream
- a feeling that you cannot empty your bladder completely
- a feeling of delay or hesitation when you start to urinate
- a need to urinate often, especially at night
- a feeling that you must urinate right away.

Treatment options for BPH
There are three main treatment options for BPH:

- **Program of monitoring or "Watchful Waiting".** If a man has an enlarged prostate gland and no symptoms or if his symptoms do not bother him, he and his doctor may decide on a program of monitoring which would include regular checkups, instead of medication or surgery.
- **Medication.** Your doctor may prescribe PROSCAR for BPH. See **"What PROSCAR does"** below.
- **Surgery.** Some patients may need surgery. Your doctor can describe several different surgical procedures for BPH. Which procedure is best depends on your symptoms and medical condition.

What PROSCAR does
PROSCAR lowers levels of a key hormone called DHT (dihydrotestosterone), which is a major cause of prostate growth. Lowering DHT leads to shrinkage of the enlarged prostate gland in most men. This can lead to gradual improvement in urine flow and symptoms over the next several months. However, since each case of BPH is different, you should know that:

- Even though the prostate shrinks, you may NOT see an improvement in urine flow or symptoms.
- You may need to take PROSCAR for six (6) months or more to see whether it helps you.
- Even though you take PROSCAR and it may help you, it is not known whether PROSCAR reduces the need for surgery.

What you need to know while taking PROSCAR
- **You must see your doctor regularly.** While taking PROSCAR, you must have regular checkups. Follow your doctor's advice about when to have these checkups.
- **About side effects.** Like all prescription drugs, PROSCAR may cause side effects. Side effects due to PROSCAR may include impotence (or inability to have an erection) and less desire for sex. Each of these side effects occurred in less than 4% of patients in clinical studies. In some cases side effects went away while the patient continued to take PROSCAR.

  Some men taking PROSCAR may have a decrease in the amount of semen released during sex. This decrease does not appear to interfere with normal sexual function. Rarely, some men have reported breast swelling and/or tenderness or allergic reactions such as lip swelling and rash.

You should discuss side effects with your doctor before taking PROSCAR® (Finasteride) and anytime you think you are having a side effect.

- **Checking for prostate cancer.** Your doctor has prescribed PROSCAR for symptomatic BPH and not for cancer—but a man can have BPH and prostate cancer at the same time. Doctors usually recommend that men be checked for prostate cancer once a year when they turn 50 (or 40 if a family member has had prostate cancer). These checks should continue while you take PROSCAR. PROSCAR is not a treatment for prostate cancer.
- **About prostate specific antigen (PSA).** Your doctor may have done a blood test called PSA. PROSCAR can alter PSA values. For more information, talk to your doctor.
- **A warning about PROSCAR and pregnancy.**

  PROSCAR is for use by MEN only.

  PROSCAR is generally well tolerated in men. However, women who are pregnant, or women who could become pregnant, should avoid the active ingredient in PROSCAR.

  If the active ingredient is absorbed by a woman who is pregnant with a male baby, it may cause the male baby to be born with abnormalities of the sex organs. Therefore, any woman who is pregnant or who could become pregnant must not come into direct contact with the active ingredient in PROSCAR.

Two of the ways in which a woman might absorb the active ingredient in PROSCAR are:

Sexual contact. Your semen may contain a small amount of the active ingredient of the drug. If your partner is pregnant, or if you and your partner decide to have a baby, you must stop taking PROSCAR and talk to your doctor. If your partner could become pregnant, proper use of a condom can reduce the risk of exposing her to your semen (discuss this further with your doctor).

Handling broken tablets. Women who are pregnant or who could become pregnant must not handle broken tablets of PROSCAR.

PROSCAR tablets are coated to prevent contact with the active ingredient during normal handling. If this coating is broken, the tablets should not be handled by women who are pregnant or who could become pregnant.

If a woman who is pregnant comes into contact with the active ingredient in PROSCAR, a doctor should be consulted. Remember, these warnings apply only if the woman exposed to PROSCAR is pregnant or could become pregnant.

How to take PROSCAR
Follow your doctor's advice about how to take PROSCAR. You must take it every day. You may take it with or between meals. To avoid forgetting to take PROSCAR, it may be helpful to take it the same time every day.

Do not share PROSCAR with anyone else; it was prescribed only for you.

Keep PROSCAR and all medicines out of the reach of children.

FOR MORE INFORMATION ABOUT 'PROSCAR' AND BPH, TALK WITH YOUR DOCTOR. IN ADDITION, TALK TO YOUR PHARMACIST OR OTHER HEALTH CARE PROVIDER.

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ands and Antonio, "a small brave boy, eight years old" who calls their bluff. Another nimble creation from England's innovative Ahlbergs.

The Sunday Outing by Gloria Jean Pinkney, illustrated by Jerry Pinkney (Dial, $14.99) Plucky Ernestine, a child who has always dreamed of journeying by train to "Lumberton, the town in North Carolina where she was born," finally gets her wish. The author relied on her roots, North and South, to create this sequel to last year's *Back Home.*

Rebel by Allan Baillie, illustrated by Di Wu (Ticknor & Fields, $13.95) Based on an incident that actually occurred when Japanese invaders entered Rangoon, the story of a defiant act that made the oppressors look foolish indeed. A quietly powerful book grounded in courage and individuality.

Alejandro's Gift by Richard E. Albert, illustrated by Sylvia Long (Chronicle, $13.95) Deep in the Southwestern desert, a kindly and observant homesteader decides he will create a waterhole for gray fox and peccary, gopher and tortoise. Then the magic begins. A book enthralling beyond words.

The Bear and the Bird King retold and illustrated by Robert Byrd (Dutton, $14.99) A recasting of a little-known treasure from the store of the Brothers Grimm, featuring a curmudgeonly hero and delightful illustrations. A real standout in the fairy-tale field.

Don't Be Scared, Scarecrow written and illustrated by Pirkko Vainio (North-South, $14.95) One good-natured straw sentinel, who quakes with fear when things go bump in the night—instead of scaring birds away. A cheering look at peaceable behavior.

In the Children's Garden by Carole Lexa Schaefer, illustrated by Lynn Pauley (Henry Holt, $14.95) "Tomato clusters" to "green bean tents," the joys of a plot tucked away in a city lot.

Russian Girl: Life in an Old Russian Town written and photographed by Russ Kendall (Scholastic, $14.95) The author spent three months with a family in the town of Suzdal and returned home to create a striking portrait of everyday life in a 1,000-year-old Russian town.

The Magic Weaver of Rugs: A Tale of the Navajo by Jerrie Oughton, illustrated by Lisa Desimini (Houghton Mifflin, $14.95) Shining with "purple from the distant mountaintops" and "yellow from the throat of a yucca," how Navajo rugs came to be, in a story steeped in legend and beauty.

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Ten Small Tales
retold by Celia Barker Lottridge,
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One Rainy Night by Doris Gove, illustrated by Walter Lyon Krudop (Atheneum, $14.95) A boy and his mother venture into the forest to collect creatures, orange newts to baby box turtles, for exhibit in a nature center, promising, "We'll take you back in a week or two, on another rainy night." The text makes you feel the raindrops dripping from the trees, the rustle of a wood frog in the grass.

Reading to Matthew by Jacqueline J. Vivelo, illustrated by Birgitta Saflund (Roberts Rinehart, $15.95) A singular meditation on the power of the stories we inhabit as children: a boy who succeeds in helping his younger brother emerge from a coma, as he sits by his side, reading aloud the books they both have loved.

A Snake in the House by Faith McNulty, illustrated by Ted Rand (Scholastic, $14.95) From the *New Yorker*'s acclaimed natural history writer, the saga of a small, striped snake, captured by a curious young hunter and at last released to a "cool, green forest of grass." A compelling encounter with a wild creature.

Ancient Ones: The World of the Old-Growth Douglas Fir written and illustrated by Barbara Bash (Sierra Club, $16.95) Into a world "silent, enormous and full of secrets"—a stunning foray into the intricate web of forest life. If the members of Congress would but open these pages, the survival of these woodlands would be assured.

So Much In Common by Laurie A. Jacobs, illustrated by Valeri Gorbachev (Boyds Mills Press, $14.95) Horace thrives on take-out pizza and perfect order; Philomena specializes in home-cooked meals and outright clutter. A reminder that the unlikeliest of compatriots can become fast friends. One of Russia's foremost illustrators establishes his

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Rosie, a Visiting Dog's Story by Stephanie Calmenson, photographed by Justin Sutcliffe (Clarion, $15.95) Into hospitals or nursing homes, anyplace where people "who are sad, sick, or lonely" need cheering up, a Tibetan terrier brings comfort and joy. Rosie's real-life adventures make for one of the outstanding nonfiction titles of the year.

Tap-Tap by Karen Lynn Williams, illustrated by Catherine Stock (Clarion, $14.95) To market day in Haiti, and back home again, in one of the gaily painted jitneys, or tap-taps, that criss-cross the island. The watercolors make you feel as if you're right there, jostling along with goats and chickens, chairs and sugarcane, and baskets of fragrant fresh bread, in Haiti's happier days.

Ashpet: An Appalachian Tale retold by Joanne Compton, illustrated by Kenn Compton (Holiday House, $15.95) From the land of hill and hollow, a Cinderella-style story, offbeat and spiced with mountain humor. The hired-girl heroine will captivate her audience.

The Shepherd Boy by Kristine L. Franklin, illustrated by Jill Kastner (Atheneum, $14.95) "Over the rocks, up the wash, a boy, two dogs and fifty sheep": in Navajo country, a trek to the place where green grass grows. The paintings are awash in canyon light.

Three Cheers for Tacky by Helen Lester, illustrated by Lynn Munsinger (Houghton Mifflin, $13.95) For every child who cannot seem to toe the line: a free-spirited penguin, living in a "nice icy land," gives noncomformity a good name. Hilarity abounds on every page.

Doctor on an Elephant by Steven Kroll, illustrated by Michael Chesworth (Henry Holt, $14.95) The larger-than-life adventures of an unsung hero, one Scotland-born, America-trained physician who braved exotic hazards to reach

Tyrannosaurus Tex
by Betty G. Birney,
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his patients in northern India's tea plantation country, 1915 till 1927.

In the Air and Everywhere by Jody Marshall, illustrated by Elizabeth McClelland (Scientific American Books, $15.95) Roadrunners to rails, a pop-up book offering a dramatic, informative introduction to the behavior and habitat of American birds. Young ornithologists on your list will crow over this one.

By the Dawn's Early Light by Karen Ackerman, illlustrated by Catherine Stock (Atheneum, $14.95) At 4 A.M., the front door creaks open and a mother who works the night shift finds her children "looking down from the top of the stairway." An evocation of a life of hard work and morning reunions, and a subtle reminder to over-indulged children that not everyone has it easy.

Tyrannosaurus Tex by Betty G. Birney, illustrated by John O'Brien (Houghton Mifflin, $14.95) Out on the lone prairie, a cowboy dino, tipping his "ten-thousand-gallon hat," vanquishes varmints and helps the good guys corral their cattle. This has got to be the snappiest campfire legend around.

My Farm written and illustrated by Alison Lester (Houghton Mifflin, $14.95) Every child deserves an armful of Lester's bewitching books. Her newest is beguiling as ever, an autobiographical account of growing up on an Australian ranch "overlooking the sea," where a wombat snoozed next to the stove and you might find your very own pony grazing in the orchard. Skedaddle right down to your bookstore for this one.

The Fog's Net by Pat Pflieger, illustrated by Ruth Gamper (Houghton Mifflin, $14.95) When a devouring mist envelops a village by the sea, ominous disappearances begin. Only the village weaver, maker of fine coverlets and fisherman's nets, can plait a future of happy endings. A dreamy tale, deftly told and coupled with haunting drawings.

Tano & Binti: Two Chimpanzees Return to the Wild by Linda DaVolls, illustrated by Andy DaVolls (Clarion, $14.95) Feasting on figs, folding leaves into treetop nests, two chimps "born at London Zoo" learn the ways of the Gambian forest. A first-rate, fascinating primer on wildlife reintroduction, paired with extraordinary drawings.

At the Beach written and illustrated by Huy Voun Lee (Henry Holt, $14.95) An imaginative junket, as a child traces Chinese characters—"mountain" and "water," "sky" and "mother"—with a stick in the sand. The story behind each

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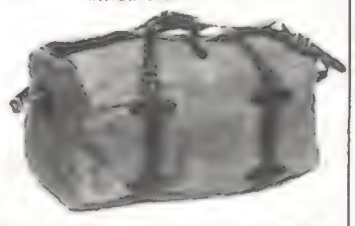

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Smithsonian Highlights

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Museum hours

Most Smithsonian museums are open 10 A.M.-5:30 P.M. daily, except December 25. Hours at the National Zoo are 9 A.M.-4:30 P.M. daily for buildings, and 8 A.M.-6 P.M. for grounds.

American Indian Heritage Month

The Smithsonian is celebrating American Indian Heritage Month throughout November with a variety of programs. For information, call (202) 357-2700, 9 A.M.-4 P.M., Monday through Saturday, and Sunday 10 A.M.-4 P.M. For 24-hour recording, call (202) 357-4574 (English) or (202) 633-9126 (Spanish) beginning November 1.

Special November exhibits, events

National Museum of Natural History
Sacred Mountains of the World (through September 5, 1995) Photographic images of mountains that have been inspirational in the quest for the preservation of wilderness. See *Highlights Continued*, page 44.

National Air and Space Museum
Aerial Inspirations: Silk Batiks by Mary Edna Fraser (through June 4, 1995) Large-scale batiks portray a vision of coastal and mountain sites throughout the United States. See page 142.

National Museum of American History
Images of Steel (through January 16, 1995) Changing perceptions of the steel industry in images by such photographers as Russell Aikens and Lewis Hine.

National Postal Museum
Best Wishes: Holiday Greetings From the White House (November 28-February 17, 1995) A series of Christmas cards from Presidential families.

Hirshhorn Museum & Sculpture Garden
Bruce Nauman (November 3-January 29, 1995) Works by one of America's most rigorously experimental artists.
Directions—Gary Simmons (November 17-February 12, 1995) First solo museum exhibition of the New York-based African-American artist.

Freer Gallery of Art
Beyond Paper: Chinese Calligraphy on Objects (through April 16, 1995) Clay, lacquer, metal, jade and bamboo objects date from the 7th to the 19th century.

National Museum of African Art
Grace Kwami Sculpture: An Artist's Book by Atta Kwami (November 23-March 27, 1995) Contemporary Ghanaian artist's book explores artwork of his mother, Grace.

National Museum of American Art
Free Within Ourselves: African-American Art from the Museum's Collection (through February 26, 1995) Paintings, sculpture, folk art and photographs by nearly 100 artists, including Sam Gilliam, Jacob Lawrence and James VanDerZee.

Renwick Gallery
Contemporary Crafts and The Saxe Collection (through February 5, 1995) The studio craft collection of George and Dorothy Saxe of Menlo Park, California—glass, ceramics, fiber, metal and wood.

National Portrait Gallery
Points of View: Single Subject/Multiple Artists (through February 20, 1995) Portraits of 16 sitters by some 70 artists, from Alexander Calder to Andy Warhol.

Anacostia Museum
Black Mosaic: Community, Race and Ethnicity among Black Immigrants in Washington, D.C. (through August 7, 1995) Oral histories, art, photographs, other materials.

Arts and Industries Building
Imagining Families: Images and Voices (through February 28, 1995) The works of 15 American photobiographer-artists speaking from diverse cultural perspectives about race, class and gender.

Heye Center, National Museum of the American Indian (New York)
Creation's Journey: Masterworks of Native American Identity and Belief (indefinite) Objects of beauty, rarity and historical significance, ancient and modern.
All Roads Are Good: Native Voices on Life and Culture (indefinite) Some 300 objects celebrating the indigenous peoples of the Western Hemisphere.
This Path We Travel: Celebrations of Contemporary Native American Creativity (through August 5, 1995) Collaboration of 15 Native American artists—sculpture, performance, poetry, music.

Cooper-Hewitt, National Design Museum (New York)
Good Offices and Beyond: The Evolution of the Workplace (through February 26, 1995) The change in traditional office design wrought by such new technologies as the desktop computer.

Archives of American Art
(1285 Avenue of the Americas, New York)
Louise Bourgeois: A Promised Gift to the Archives of American Art (November 11-December 11) Exhibition of letters and works by the American sculptor.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call (202) 357-3030. November events include:
Martha Reeves and Berry Gordy Jr. In a Motown Celebration! (November 2, 7 P.M.; November 9, 7 P.M.) Two special evenings with singer Martha Reeves and legendary Motown founder Berry Gordy.
Sacred Mountains of the World (November 12, 10 A.M.) A seminar with mountaineer and scholar Edwin Bernbaum, in conjuction with exhibit at the Museum of Natural History.

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Highlights Continued

Mountains of magic and majesty

Province of rock and ice, swirling mist and cloud, Earth's looming peaks are eternal emblems of mystery and power. Across history and cultures, humans have revered such imposing heights as realms of the ineffable—Egypt's Sinai, where Yahweh is said to have handed down the Ten Commandments to Moses; the Himalayas' Mount Kailas, regarded by Hindus as the site where the divine Ganges River cascades from heaven to touch Earth; Olympus, dwelling place of the Greek pantheon.

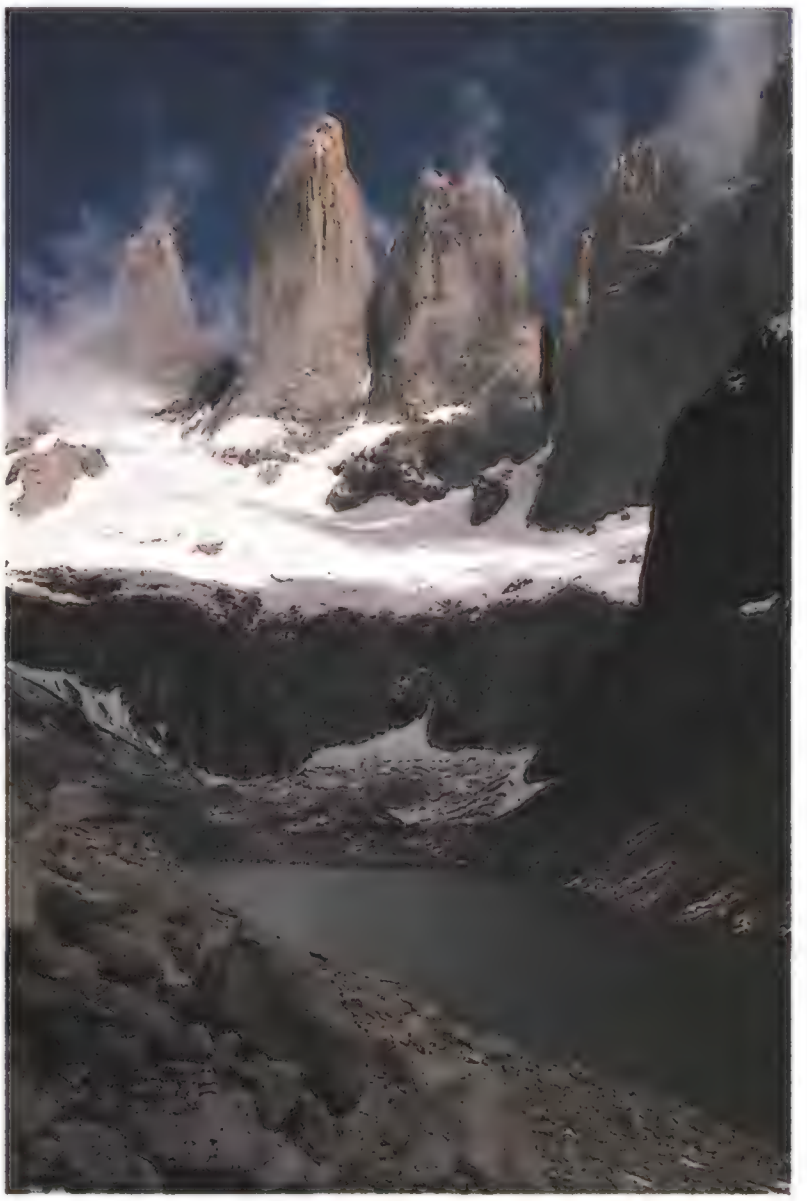
These legendary peaks, and others around the globe, are celebrated in "Sacred Mountains of the World," an exhibition of photographs opening at the Smithsonian's National Museum of Natural History on October 7 and continuing through September 1995. The show is based on the book of the same title, written by Edwin Bernbaum and published in 1990 by Sierra Club Books.

For Bernbaum, an accomplished mountaineer who holds a doctorate in Asian Studies, the deep love of mountains is rooted in his childhood. As the son of a Foreign Service officer, he began climbing in the Andes at the age of 11. As a Peace Corps volunteer in Nepal in the late 1960s, he delved ever deeper into the cultures and landscape of the Himalayas. The result, eventually, was his book, a rich and visually splendid foray into myth and art history, wilderness writing and mountaineering, history, geography and anthropology.

Visitors to the show—who will view Bernbaum's images and those of several other photographers—will emerge wanting to track down the author's book and continue a compelling armchair journey.

Diane M. Bolz

Hovering like floating islands over Washington State's Mount Rainier, cloud banks create a dramatic display above the snowcapped peak that rises 14,408 feet above Puget Sound.



Sacred to the Araucanian people of Patagonia, the Towers of Paine are said to be the ossified remains of ancestral warriors killed by a marauding demon.

A climber returning from an ascent in the Karakoram Mountains, the range extending from China to India and Pakistan, exults as he reaches a lush green meadow.

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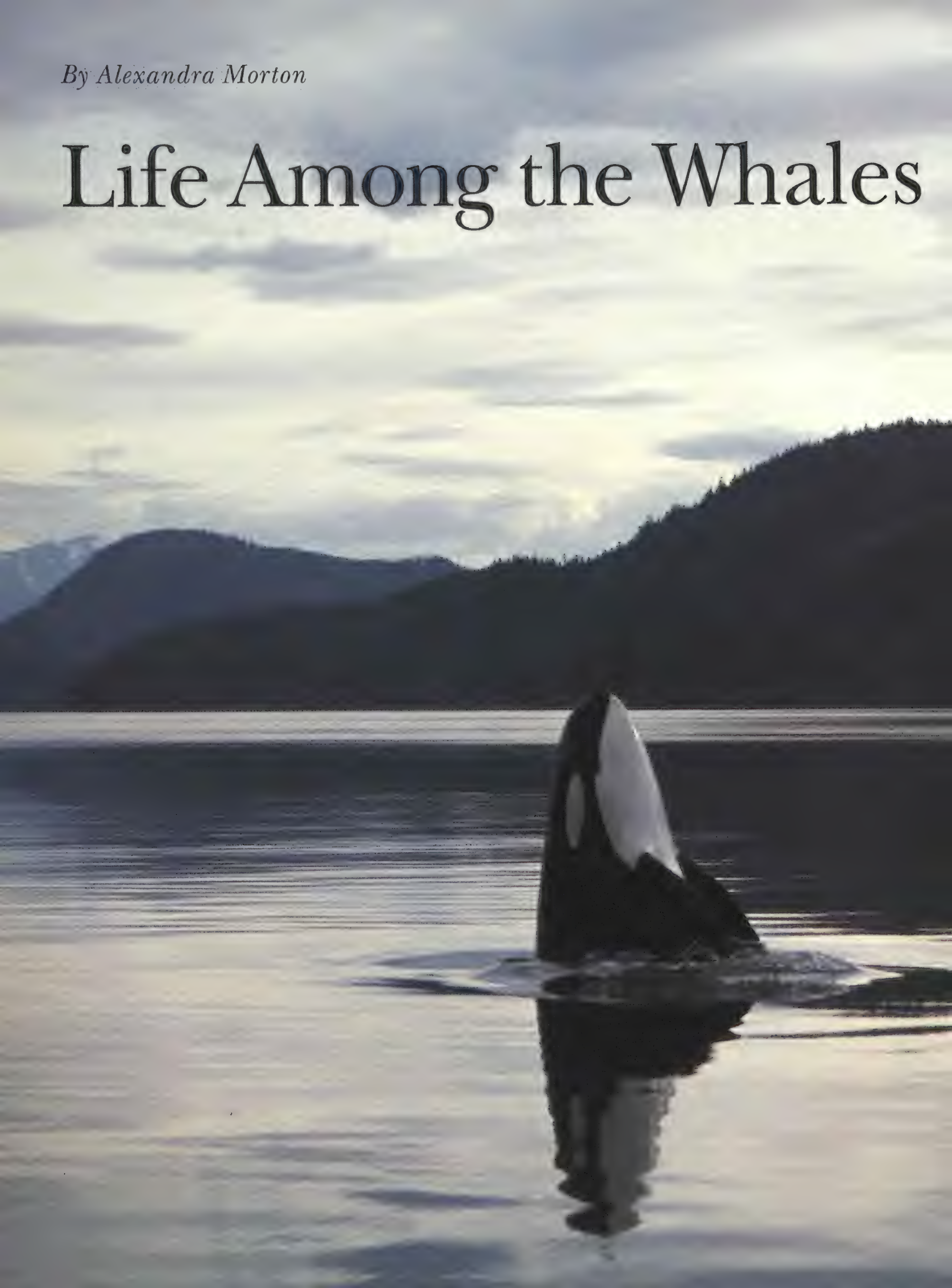
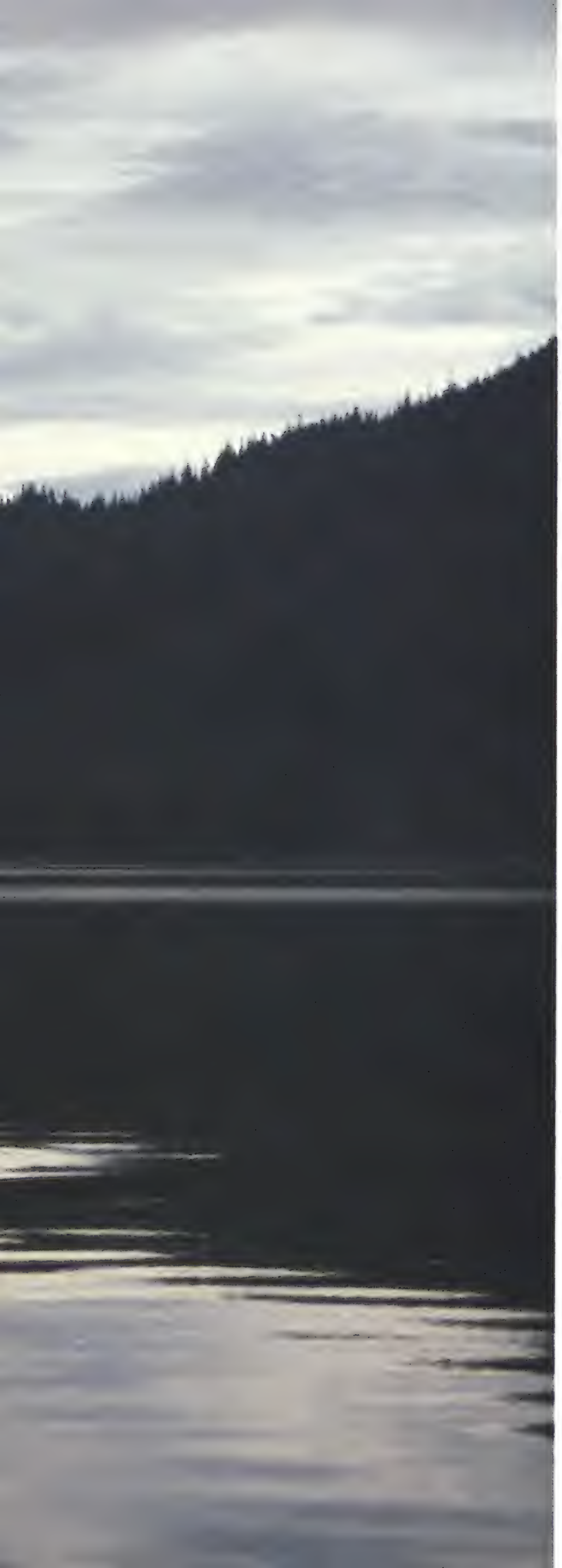
By Alexandra Morton

Life Among the Whales





For 15 years the author has been following pods of wild killer whales as she tries to understand their complex behavior

I sat next to the aquarium tank in the warm California night in 1978 and watched the two killer whales below me. The loudspeaker on the wall reverberated with a plaintive call that I had heard again and again from the female. Two days before, following the death of her third calf, Corky had begun to call every few seconds. Her cry was starting to sound hoarse and raspy. When her dead calf was winched from the tank, Corky had thrashed against the concrete-and-glass walls, but now she lay motionless on the bottom, rising only to breathe. Occasionally her mate called out in response, but she ignored him, and her pitiful cries continued.

Corky had lost her calf to starvation. Although she was extremely attentive to her baby, she didn't know how to nurse it. The calf had chirped endlessly for nine days as its mother's milk flowed uselessly into the water. Corky had been taken from the wild, removed from her mother and the rest of her family pod when she was very young, and had never learned how to nurse.

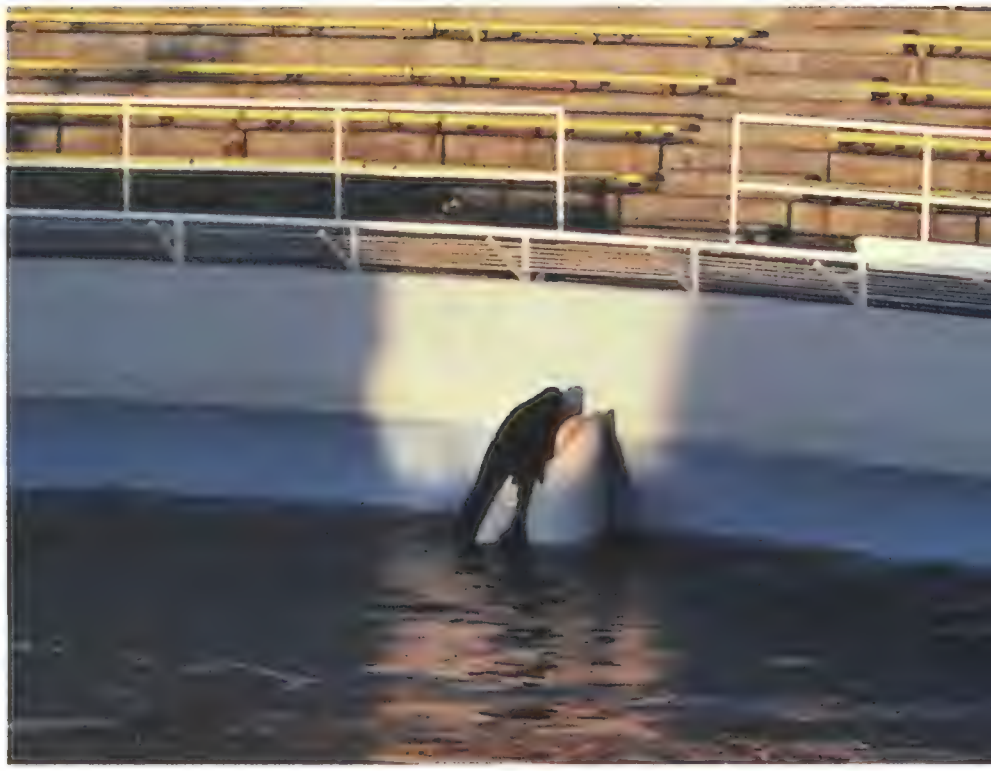
I heard the male, Orky, vocalize again, and this time Corky answered him. She rose to the surface and exhaled beside him, and then the pair dove together. Soon, I heard them calling back and forth. As they undulated gracefully, Corky's pectoral fin rested lightly against Orky's side. I was deeply touched by the comfort Corky had finally found in her mate.

Exhausted from my 72-hour vigil, I decided that I could no longer study killer whales in captivity. I had already spent several years researching cetacean communication, first with bottle-nosed dolphins, then with Corky and Orky at Marineland in Los Angeles. I longed to understand the complex repertoire of orca vocalizations, and now I felt it was time for me to join killer whales in their natural environment.

Killer whales, or orcas, are found in all oceans and major seas at any time of year. Next to humans, they are the most widely distributed species of mammals on Earth. They are formidable predators of both fish and marine mammals. The larger males can weigh 11 tons, attain lengths of up to 32 feet and swim at speeds as great as 20 knots (23 miles per hour). They use echolocation to find and track their prey, emitting a constant

To see what is going on out of water, a curious orca "spyhops," popping its head vertically above the surface.

Like their wild kin, Corky and Orky synchronized play behaviors that, once perfected, weren't seen again.



Before dawn, Corky squirts water and flicks her tongue at the spot on tank wall where sun's first rays will hit.

stream of "clicks" that bounce back from surrounding objects and give the whales a mental sense of what lies in the murky waters ahead. They communicate with other orcas by using whistles and various calls.

Canadian researcher John Ford discovered that each killer whale pod has a slightly different language or dialect. I had learned the sounds and cadences of Corky's pod dialect, and I felt that if I could find her family in the wild I could seek relationships between what the whales were doing and saying. But how could I find her natal pod?

Corky had been captured off the west coast of Canada in 1969, but the oceanarium staff didn't know where I should look along the hundreds of miles of rugged coastline. And I might never have found the pod without the help of the late Michael Bigg of Canada's Pacific Biological Station on Vancouver Island. In the early 1970s Bigg headed a population study of killer whales that frequented the coast of British Columbia and Washington State. Photographs made by his team revealed that the orcas carry unique markings. On each one the dorsal fin and the gray patch behind the dorsal, known as the saddle, are distinct. Every member of the population could thus be identified and tracked for its entire life, and Bigg could draw the whales' family trees and map territorial boundaries. By studying photographs taken during orca roundups, he could often trace an aquarium captive to its pod of origin.

When I decided to track down Corky's family I contacted Bigg—and was stunned when he sent pictures of her pod and told me where and when I might find it.

I quit my job, packed my belongings into my pickup and headed north. Rolling off the tiny ferry at Alert Bay, a Vancouver Island fishing village on the Johnstone Strait, the first thing I saw, staring at me with unblinking eyes, was a totem pole crowned by a killer whale motif.

I unfurled my Zodiac inflatable boat on the beach, mounted the engine, stowed my assorted gear and paddled to the closest wharf. I had arranged for Paul Spong, a killer whale researcher, to guide me to his small research facility on a nearby island. In the northern twilight the sky turned dark red, and my stomach knotted in apprehension as I waited for him. Where would I go if he didn't come, and how would I ever find Corky's family pod?

Across the water I spotted silver plumes erupting from the brilliantly colored surface; proud, straight black fins emerged. There they were, wild orcas. Adrenaline rushed through my body, but I clung to the dock. I knew nothing of these waters or this northern wilderness. But the sight of the whales so close to me was magnetic. With my eyes riveted to their rippling flukeprints, I timidly pushed off from the wharf.

In Johnstone Strait I was no longer peering down at whales in a tank, I was among them. They swirled the water beneath me and rose beside me. I was the visitor; they were at home. I lowered my hydrophone, an underwater microphone, placed the headset over my ears and pressed the "record" button. Echoing in the vastness of the deep, numbing water were the familiar calls of

Alexandra Morton supports her research on killer whale behavior through writing, photography and work on fishing boats off British Columbia.

Corky's dialect. It seemed incredible that in this expanse I was able to find one particular family; I gave silent thanks to Mike Bigg. As I watched calves nuzzle their mothers and splash in the red-gold waters, I knew then that I belonged there.

Shortly, Spong appeared and led the way to his research station, where I set up camp. The summer flashed by in a blur—whales passing under my boat, their breath fogging my camera lens, and their calls filling my head. I also learned about engine breakdown, drying wet bedding in a northern rain forest and the incompatibility of electronic equipment and salt water. But I was able to record hours of tape of Corky's pod.

I spent my first two summers in Canada living in a big canvas tent. I arrived with a stack of blank tapes, hoping to fill them with whale sounds. I would get up very early and head out in the 12-foot Zodiac to find whales. Days would go by without my seeing orcas, and I would drift, listening and watching for them. On the days that I found whales I would record their calls as well as verbal notes about their behavior. Stormy days were welcome; I could catch up on sleep.

My initial research suggested that the primary function of killer whale communication is to keep all pod members in touch and traveling in the same direction in the murky green waters off British Columbia. The calls also appeared to inform the group about what was going on; whales made different sounds when foraging or at play. Most dramatic was the call used during a change of direction: the same sound Orky had made to rouse his grieving mate. I roughly interpreted this special call as "swim with me, in this direction." But I had no explanation for why the whales produced so many different sounds or why some calls seemed random and unconnected to any specific behavior. Obviously there was a great deal going on that I knew nothing about.

Greeting dawn with a flick of the tongue

Before going to Canada I made some observations that suggested complex social behaviors no one else had described. Every morning that I'd spent with captives Corky and Orky I saw them select a spot along the tank wall in the predawn light and gently squirt water at it. Then they opened their mouths and flicked their tongues at the chosen spot. When the sun appeared, the first beams of light invariably hit the exact spot the whales had marked. As the seasons changed, the spot moved, but the whales always knew where it was. In the early morning sunlight the whales played boisterously, chasing each other, spiraling nose-to-tail in tight circles and creating huge swells that sloshed out of the pool. If a cloud passed, the activity stopped until the sunlight reappeared. Because of the position of their tank they didn't respond to sunsets, but once during a thunder-

Alex Morton searches for familiar dorsal fins in this photograph taken by her late husband, Robin.

Filmmaker Robin Morton checked on underwater camera wearing scuba rebreather that later caused his death.

Corky's pod surrounded Morton's boat when she got lost in a shipping lane in the fog without her compass.

storm, I saw Orky flick his tongue at lightning and make a low groaning sound.

Corky and Orky also engaged in precisely synchronized forms of play. The most intricate took weeks to perfect. Just after dawn, when no trainers were around, they would lie side-by-side, their tails resting on the trainer's platform while each held a pectoral fin aloft. At first they had timing problems and sometimes held the wrong fin up or collided when trying to flip their tails out. When the performance went smoothly they stopped doing it. The fun was apparently in learning.

In Canada I watched Corky's pod perform similar highly synchronized behaviors and energetic play at day's end. I saw two bulls float head-to-tail, oriented toward the pink blaze of the setting sun, and hold their pectorals aloft in a kind of cetacean salute. Another evening I saw four whales "spyhop"—poking their heads vertically above the water to take a look around—side by side, in perfect unison, facing the sinking sun.

These ritual-like behaviors hint at a rich, vibrant social core. The need to respond to the sunrise was so strong in Corky and Orky that 12 years in a tank had not thwarted the behavior. It is clear that orcas respond to what is going on above, as well as below, the water.

During the early years I spent bobbing among killer whale fins, Corky's pod became tolerant of my presence, and slowly I became familiar with each of the individual personalities.

Killer whales are a matriarchal society, and the grande dame of Corky's extended family was named A9. (Alpha-numeric code names make it easier to track the whales by computer.) Killer whales mature at a rate comparable to our own, sexual maturity beginning in the early teens, full maturity in the early 20s. Females have a life expectancy of up to 80 years in the wild, bulls to about 60 years.

The identity of Corky's mother, A23, was known because at the time of Corky's capture the calf was swimming tightly against her mother's side. All calves exhibit this behavior, or swim just behind their mother's dorsal fin, except when playing with other youngsters. Several photographs from the 1969 capture show mother and daughter in their last hours together, and these images helped Bigg find Corky's mother's pod. When I found the pod, she was with two more-recent offspring. She swam with another female, probably a sibling, whose female calf was about the same age as Corky when she had been taken. The calf was dubbed "Sharky" because of her unusually sharklike dorsal fin.

Sharky was an exceptionally outgoing calf, and she often approached my boat with her year-old brother in tow. She seemed curious about my actions. As I lowered the hydrophone she would come as close as she dared and then wriggle off in excitement. If I put my bare hands into the bone-chilling water I could feel her

She doesn't claim that the whales consciously rescued her, but they did change course and lead her to safety.

echolocation clicks against my skin as she tried to make sense of this strange creature.

Years later, when Sharky suddenly lost interest in me, her shift in behavior was so dramatic that I was worried. The explanation came 18 months later when, at the age of 14, Sharky gave birth to a daughter, whom I named Charlotte. Sharky no longer swam at her mother's side but remained in the pod, with Charlotte tucked behind her dorsal fin.

Newborn orcas are very well developed at birth. Within the womb the little whale is curled sideways, its nose against its tail. The calf emerges with deep creases running vertically from the base of the dorsal fin to its belly, due to the way it was curled. At birth the tail lies folded together like resting butterfly wings, and the tiny dorsal fin is flopped to one side. Within the first 20 minutes of life the fins stiffen, giving the whale its proper shape and the ability to swim. However, a newborn is weak and requires help swimming. The mother tows her baby, which rides in her current, between her dorsal fin and tail, behind the widest point of her body.

Orca pods stay together for life and are composed of up to four generations of related females and their offspring. The young calves grow up in the company of their brothers and uncles, but not their fathers. Whenever I encountered A9, she was usually flanked by two magnificent sons who remained at her side until her death in 1991. After she died, the two no longer traveled with their pod but lingered all winter within a few miles of the spot where they had last seen their mother alive. Then they vanished. As each family returned the following spring, I searched for the brothers' distinctive dorsal fins without success. I thought that they, too, had died, a common occurrence with orphaned bulls.

A welcome summer reunion

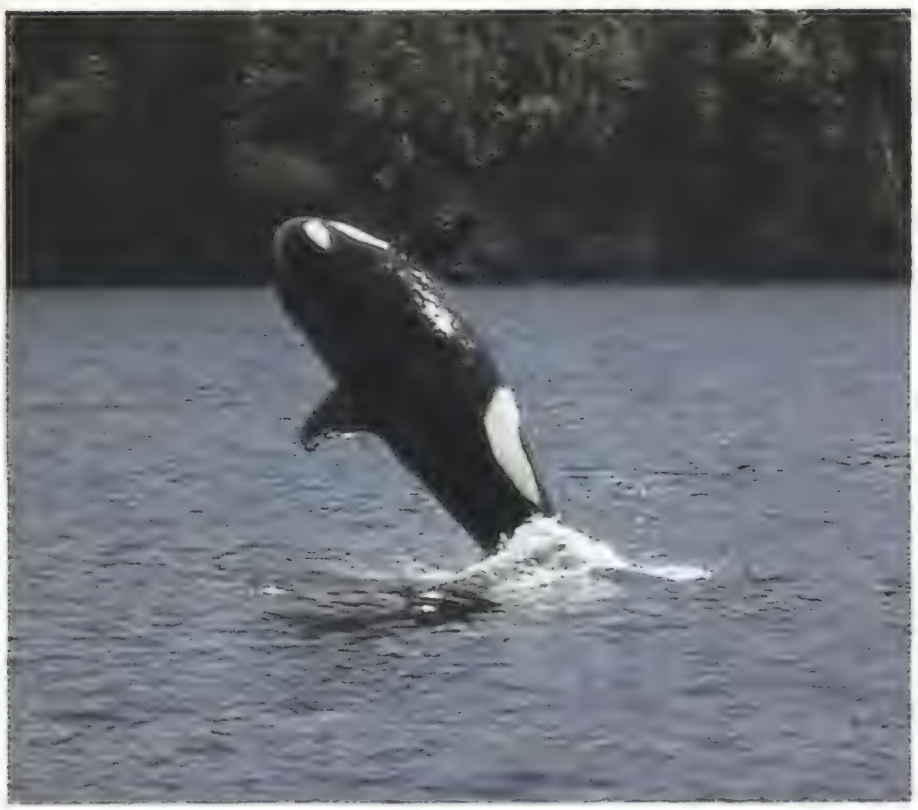
During July and August huge numbers of spawning salmon funnel through Johnstone Strait en route to their birth streams. This annual concentration of fish draws orca pods from throughout the region for a community gathering. Early arrivals often swim north and greet newcomers. Late in August 1992, while I traveled with one of these groups, A9's two sons suddenly appeared. As the escort whales surrounded the pair, goosebumps rose on my arms. I had truly missed them.

The oldest son, A5—also called Top Notch—carries one of the most massive fins on the coast. Despite his immense size I have always felt at ease near him. He was the first whale to approach me on the day I discovered Corky's pod.

I took pictures whenever I found new calves or teen males—who change in appearance rapidly as they grow—or any adults with which I was unfamiliar. These photographs helped Mike Bigg fill out his orca genealogies. Taking ID photographs of whales isn't easy; I had to photograph them from the left side for consistency (markings differ from side to side), up close and in perfect focus. Proximity is the key. I learned to follow a pod slowly and quietly.

Whenever the whales did focus their attention on me it was incredibly powerful. Once, when I was charged by a teenage male, I knew there was nothing to be gained by fleeing, so I maintained my speed and paralleled his course. He dove and, I was relieved to see, reappeared at his mother's side. Another time he appeared out of nowhere, inches from the stern of my boat. I'd been floating for an hour and had seen no indication of whales nearby. Suddenly he exhaled in a mighty *WHOOSH* right beside me. I jumped and my heart slammed into my ribs. Though I was startled, his manner was nonthreatening. I took it to be a form of whale joke and laughed as he skimmed alongside, his eye

On its back, a young male playfully slaps his tail and simultaneously sweeps his pectoral fins to and fro.



Calf breaches in front of unseen podmate. Its reentry will create a cloud of bubbles for both whales to play in.

Flipping tail flukes at the surface is another type of exuberant play often seen when two or more orcas meet.

swiveling up to get a look at me. I noticed that he was nearly the same length as the 22-foot boat I was using.

On a drizzly afternoon in the summer of 1980 a young Canadian filmmaker pulled alongside my boat. He invited me to a field studio he and his partner had built on Vancouver Island, complete with an underwater camera that was aimed at a submerged pebble beach. This beach is a playground for the whales, who seem to enjoy rubbing their sensitive skin on the rocks. The two cinematographers wanted to film my reaction to watching the objects of my study frolicking in their world.

The man with an orca on his shoulder

I was skeptical and unimpressed; I was sure their camera would never work. When I arrived, the other partner was underwater attending to the equipment, so I waited on the beach. The lean figure in a wet suit that emerged smiling from the green water held my attention as he waded ashore and peeled off his insulating suit. He had a killer whale tattooed on his shoulder. "Who is this man?" I thought to myself.

The camera did work. I watched in amazement as Top Notch loomed into view, somersaulted and rubbed the entire length of his back on the pebbles. I had always longed to see what wild whales did beneath the surface. I was ecstatic.

Seven months later I married the cameraman, Robin Morton. His films on killer whales have been shown internationally and were used to protect the submerged beach as a provincial ecological reserve. We bought an old boat, the *Blue Fjord*, and dedicated ourselves to whales. At the end of the year our son, Jarret, was born. To make money we chartered out our boat for a variety of non-whale-watching uses and explored the coast looking for a site for basing a year-round study.

On a cool, wet October day in 1984 we took our Zodiac and followed Corky's pod as it entered a steep-sided, mainland inlet surrounded by snowcapped peaks. As we traveled farther into this mist-enshrouded place we felt as though we were entering another world. So it was quite unexpected when we spotted a small house floating on a raft of logs. It looked warm and inviting with smoke curling out of the chimney. Other houses lay beyond. Soaked and cold, we left the whales and turned to meet the people who lived there.

We were welcomed by an eclectic group of residents and realized this was the place we'd been looking for. We knew there were whales because they had led us there. There was a post office where mail arrived by seaplane, a place for us to moor the *Blue Fjord* and, incredibly, a cheerful one-room school. Jarret, who had spent more time among whales than children, was definitely ready for playmates of his own species. And so we began to moor the boat there and adopted Echo Bay as our

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home. Our community had no power, roads or waterworks. There were no telephone lines for staying in touch with our families. But for the three of us it was perfect. Jarret had playmates and the warm, cozy homes of new friends, while Robin and I had endless miles of coastline to explore.

Whale sightings were infrequent, but so little was known about the winter activities of killer whales that we saw something new with every encounter. When we came upon other boats we pulled alongside, inquired if they'd seen whales and asked them to call us on the marine radio if they spotted any. A few of them called in, and slowly we built a network of spotters. Today more than half of my sightings come from these people.

That winter we learned that because of the depleted food supply, the big pods of summer fragment into smaller "subpods" made up of one or two mothers—probably sisters—their offspring and their brothers. These groups are quieter and less boisterous as they forage in kelp beds and along the base of steep inlet cliffs.

The killer whales off British Columbia are split into three different social groups: residents, transients and offshores. The differences between residents and transients are remarkable. Residents eat fish, travel in larger associations, vocalize often, remain with their mothers for life and travel predictable routes. Transients eat mammals—seals, sea lions and other cetaceans. They are quiet and their pods are small—five or fewer. Their fins are more sharply pointed. They are difficult to locate because they travel unpredictable routes. Transients are difficult to study because they suddenly disappear, with years passing between sightings. The offshores have only recently been discovered, and we know little about them. They live in open waters and only occasionally come inshore.

As we followed Corky's pod—residents—during the winter months, we began to encounter more transients. They were wary of us when we tried to approach and reacted as though we were stalking them. Residents had become familiar with our photographing behavior, and basically ignored us. Transients, however, did not. Their uncanny ability to simply disappear, even in open water, I think was used in efforts to lose us. Sometimes they surfaced three or four times, heading one way, only to reappear minutes later, swimming far behind us and in the same direction. At other times they resurfaced and spouted behind islands or rock piles. We always presented ourselves as entirely predictable, and the pods we en-

Members of a resident subpod "blow" in unison as they slowly forage for salmon. Such groups usually consist of a mother, her offspring and the calves of her daughters. Males are thought to mate outside their family pod.

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countered most often soon relaxed enough for quick photography sessions.

Robin and I found transients to be bolder and more aggressive than the residents. One day, as we trailed behind a transient pod, a calf and two older juveniles backtracked and appeared close to us. One came up several yards off our bow while the other two flanked us. I instantly felt corralled. On their next surfacing the whale to starboard came up with his side against our rubber boat. As he swam he pushed us toward his pod mate. I didn't know whether this was an aggressive, playful or exploratory gesture, but I didn't want to play his game and reacted by throttling into neutral. If he hit our propeller, we would both suffer damage. None of the adults participated in the juvenile's activity, so I settled on something between exploratory and playful.

Several months later I spotted a large group of transients from several pods. Robin had left on a film job, and Jarret was at a friend's, so I departed alone and followed the orcas. They were spread out, so I moved slowly from group to group, trying to identify them. We came to a large bay, and the lead whales stopped at the entrance and floated while the others caught up. All breathed rapidly for several minutes, saturating their blood with precious oxygen. Then they rolled into steep dives, showing their entire backs to their tails.

I started my stopwatch to time their dive. There was a sea lion haulout in the bay, so I positioned my boat, turned off the engine and dropped the hydrophone. I waited in a torrential downpour, counting the minutes. Resident pods dive for 2 to 3 minutes, so after 15 minutes I thought I had been given the slip.

Suddenly the still, dark water exploded ahead of me in a wall of white foam. The cliffs reverberated with gunshotlike sounds from the whales as they heaved air from their lungs. Over the hydrophone their eerie, haunting calls began. I quickly pressed the record button to catch these rarely heard vocalizations and raised my binoculars. I thought I knew the power of killer whales; I'd been traveling with them for five years. But as I witnessed bodies of bull sea lions weighing up to 2,000 pounds sailing through the air, the show of power was so great that it seemed unreal.

Recording the sounds of underwater battle

The whales tore through the water, spray flying off their dorsals as they tried to land blows with their heads or tails while managing to avoid the huge canines of their agile sea lion prey at the same time.

I was content to observe from a distance and record the sounds of underwater battle. I was pretty sure that if I moved within range one or more of the sea lions might try to escape the attack by jumping into my boat. Neither the craft nor I could have survived the landing.

Morton sees orcas from kitchen, but hears them first, thanks to a speaker linked to hydrophone in the water.

On research boat *Blackfish Sound,* Alex, son Jarret and their dogs can follow whales, subsist for several days.

Shortly, as the whales were consuming a hard-won meal, I sped home in the rain-soaked twilight, my mind replaying the sight of whales and sea lions suspended in midair, each fighting for the right to survive. I had valuable data and a new awareness of my physical fragility.

On September 16, 1986, my life unraveled. Robin was filming A9 underwater at the pebble beach. One way orcas threaten one another is to release a cloud of bubbles. Robin believed that they might be more accepting of his underwater presence if he weren't releasing air with each exhalation. That day he was using a rebreather system, scuba gear designed to emit no bubbles. He had used it before. But this time a tiny valve became clogged, reducing the flow of oxygen. Although everything seemed to be running normally, I sensed something was wrong when A9 approached him and then immediately departed. I jumped overboard but was unable to do anything more than retrieve his body. He had died among the whales he loved, a hundred yards from where I'd first watched him walk out of the sea.

My research faltered as I learned to deal with the rig-

Once a floathouse, Alex's home was hauled ashore a few years ago with the help of her Echo Bay neighbors.

The town—accessible only by boat or seaplane—is near Simoon Sound on the rugged coast of British Columbia.

ors of wilderness living on my own. Every detail seemed to require monumental effort. I sold the *Blue Fjord*. The Zodiac was lost in a storm. Jarret and I moved into a small floathouse, and the first thing I had needed to learn was how to use a chain saw. If I couldn't get my own firewood I would be dependent on my neighbors. I thought of the chain saw as a monster machine, and at first I operated it only when the weather was calm enough to fly to a hospital for emergency care. Eventually I got the hang of it and found a certain pleasure in cutting and squirreling away my own wood. A visit from a bear that tried to force its way into my home convinced me to learn how to handle a rifle. The most difficult challenge was living as a single woman with a young child in a community of 30 people. My remedy was to embrace my research and remain firmly focused on my purpose for being there—the whales. Finally, I was accepted by my neighbors.

I spent the next seven years researching killer whales on my own from my new 22-foot vessel, the *Blackfish Sound*. The boat allowed me to follow whales for days at a time; Jarret and I could anchor wherever the evening found us or tie up to the floating homes of friends. My son developed into a capable deckhand. He often steers, and his steady hands make him a natural at videotaping whale encounters. On one occasion he caught the surfacing of a newborn calf.

The advantage of a long-term field study is the learning that unfolds over time. As the seasons run by I have a growing sense of how complex these creatures are. With each encounter I acquire more pieces of the puzzle. Most of the time I don't know where they fit until I have a day when I observe how several variables are related, and suddenly I gain one more insight into their behavior. Undoubtedly part of what attracts me to orcas is the certainty that beneath their impassive and regal exterior, deep pools of character and experience swirl. Their lack of facial movement imparts a certain "unknowability" to us humans, whose first language is the change of facial expression. A whale never frowns, grimaces or laughs. There is only the ever-present Mona Lisa smile. Whales don't offer their secrets freely.

On a crisp fall day in 1980, I was tagging along behind Corky's pod, watching through binoculars as they socialized with other members of their community. We were in a large body of open water. Ahead, a bank of fog rolled thick and dark along the horizon. It looked much farther away than it was, and soon it rolled over me, dampening the paper I was writing on. When I looked up I was completely disoriented. Very foolishly I had left without a compass and now had absolutely no idea of which way to go.

My predicament was compounded when I realized I was in an active and narrow shipping lane. Over the hydrophone the dull roar of a luxury liner became louder as it approached swiftly. To a small boat, cruise ships are massive monoliths with knife-edged bows. Panic started to take over; I didn't know which way to turn. Then the pod—A9, Top Notch and the others—surfaced serenely beside my boat.

I didn't care where they were headed; I knew they would avoid the ship and I'd be safe. But my relief was tempered by the worry that tracking them would be impossible in the thick gray fog. The whales had been on such an erratic travel pattern all day, it was amazing I had stumbled onto them at all. Nonetheless, I started the engine and puttered along parallel to them. The next time they surfaced the group was even closer, tightly bunched alongside me. As they dove, Sharky and her mother veered beneath me; several times I shifted into neutral, concerned they might graze the propeller with their flukes.

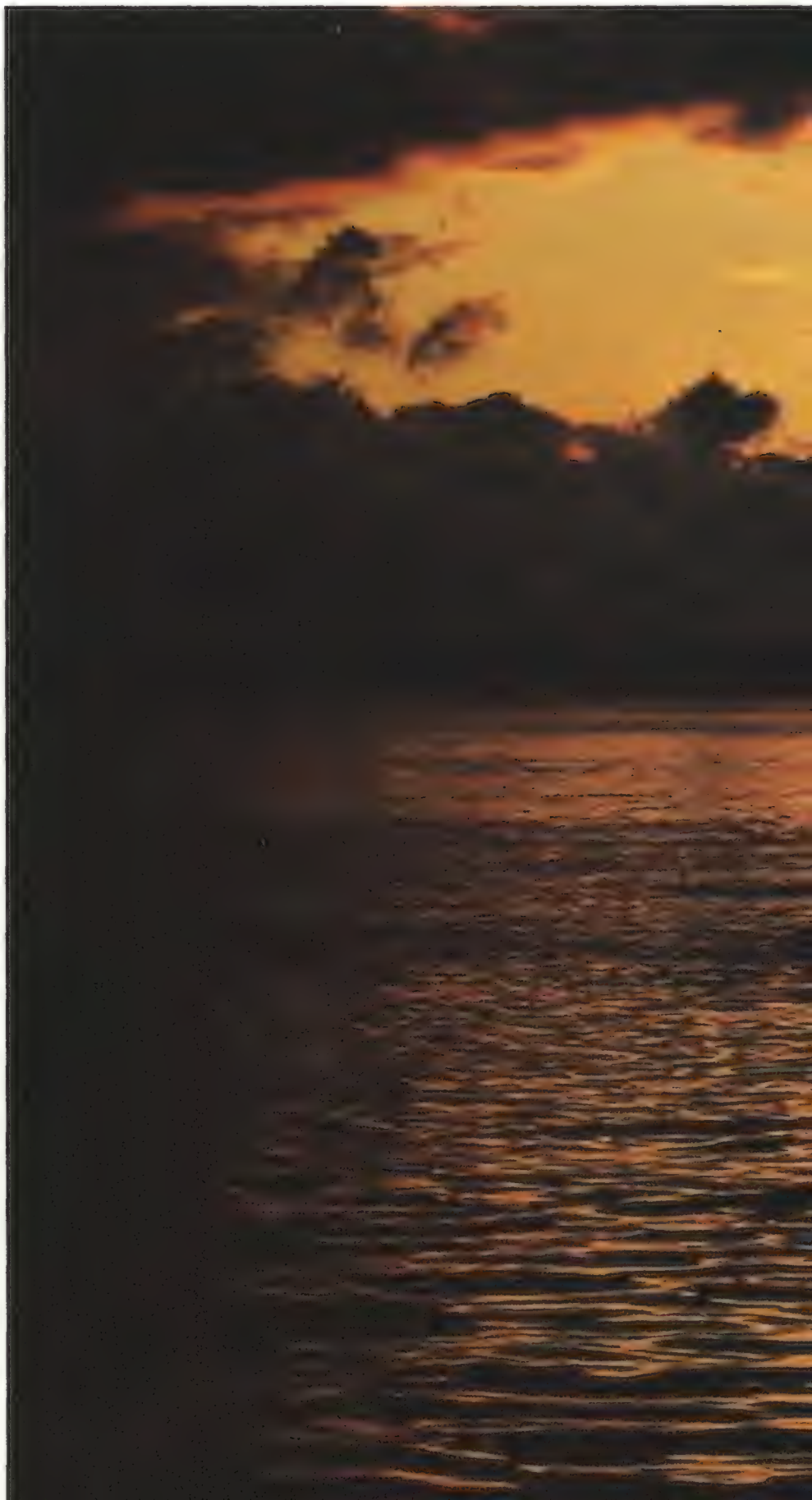
I assumed we were heading deeper into the fog, but after 20 minutes I saw the vague outline of a tiny island crowned with twisted cedars. The pod vanished, and I sped for the islet, bursting into the glorious evening sunlight. As I got my bearings, I realized the whales had turned 180 degrees and taken me back home.

My mind was reeling. Had they rescued me? Was that even remotely possible? Whatever their motivations, they had turned around, stayed close to me until I was safe, then apparently returned to their original course.

That was a long time ago, and in the years since, my life has gone through many changes. They are defined by the death of my husband, Robin, the passages of Jarret's childhood and the appearance of a tugboat named *Gabriola*. She turned the corner into Echo Bay in August 1993 and now calls my floathouse her home port. Her skipper, Eric Nelson, and Jarret and I now roam the coast together. Eric beachcombs and works his boat, and we tow my boat so that I can take off in any direction when I see killer whales.

Echo Bay has changed too. Now I see fewer whales, fewer salmon. Fish farms raising salmon are on the increase, and around them the seabed has become fouled with fish feces, decaying food and chemicals. Wild salmon are now frequently found to be infected with the same diseases as the farmed fish, which live under crowded conditions that cause epidemics. At the same time, the fish farms broadcast high-amplitude sounds underwater to scare off predatory harbor seals, and whenever they do, whales disappear.

Nowadays the local tourism industry has burgeoned with people who want to watch wild whales, and it is difficult on summer days to hear the orca calls over the sounds of tour boats. Fortunately most of the tour oper-



"Sleepswimmers," orcas draw close, traveling slowly while they rest, breathing and diving together.

ators cooperate with whale researchers, and several compromises are under consideration.

Increasingly I have found myself in the position of protecting the whales' interests, as I understand them, against the groups that want to change this coastline, whether it be for fish farms, extensive logging or increased tourism. What is good for the whales is good for everyone: clean water, abundant sea life and expanses of pristine wilderness.

I think that during the 15 years I've spent with them, these whales have gotten to know me. They probably know where I live, the extent of my range, and that I scurry home when darkness falls. I don't mean that they have ever demonstrated any recognition—for the most part they ignore me. I have tried to present myself as predictable and reliable, and I let them know that I will pull back and let them enter narrow channels first, as well as maintain a steady speed and straight course if young calves come near me to investigate. I shut off my engine and float at a distance when they rest.

As the first southeaster of fall bends the tops of the trees around my house and scatters the summer tourists, I look forward to what I might learn this winter. My list of questions still runs longer than my answers. The most wonderful aspect of studying such fascinating creatures is that my job will never be finished. All of my adult life has been spent in their company, and I can see no reason that should change.

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THE STRENGTH OF EXPERIENCE

By Doug Stewart

There was too much Jonah in Brunel's hapless leviathan

The realized dream of an engineering genius, the Great Eastern *was the biggest, fastest steamer afloat—and a maritime nightmare*

It was November 1857. As high tide approached on a gloomy London afternoon, the Eighth Wonder of the World was poised to slide grandly down a ramp, sideways, into the sewage-filled Thames River. At nearly 700 feet the enormous ship was the *Great Eastern*, double the length and triple the tonnage of the largest vessel then afloat. Fully laden, her 22,000 tons would outweigh all 197 ships that had defeated the Spanish Armada.

Her creator and champion was Isambard Kingdom Brunel, a flamboyant, hot-tempered engineer who stood just 5 feet 4 inches tall but possessed a compensating love of grandeur and a suitably majestic name. The *Great Eastern*'s massive iron hull was the heaviest object mankind had ever attempted to move, and Brunel was keenly aware that dislodging it wouldn't be easy. Because his voice commands would barely carry over the ship's 692-foot length, Brunel had ordered that the launch take place in utter silence. Onlookers were to be banned from the shipyard entirely.

Unbeknownst to Brunel, the syndicate that owned the ship, impatient to recoup some of the $3 million it had forked out during three years of construction, had sold several thousand tickets to the public; like a premature tide, chattering ticket-holders now began to flood the shipyard. Offshore, the river grew clogged with spectator boats. Sideshow attractions—a performing dog, a six-legged sheep—lined the route to the shipyard and the innumerable local pubs had enlisted bands to attract passers-by. In all, an estimated 100,000 people were on hand to watch the show. "Their excitement and determination to be present at any cost, are not to be wondered at," a newspaper observed, "when we consider what a splendid chance presented itself of a fearful catastrophe."

As the hauling chains were readied, a syndicate official handed the exasperated Brunel a list of names to choose from, "Great Eastern" having been criticized as a double adjective. "Let them call it 'Tom Thumb' if they like," Brunel snapped. Moments later, the ship was

The massive iron ship was so long (692 feet) and so heavy (12,000 tons) that in 1857 she had to be launched broadside. Even so, she got stuck on the way down and didn't make it into the Thames for three months.

instead christened "Leviathan"—a name that never stuck. Any shipwright knows that changing a ship's name brings bad luck, but Brunel and his colleagues considered their creation incomparable to anything a shipwright could build.

As the steam winches began their work, the iron hull rumbled eerily but refused to budge. The hauling chains had links weighing 72 pounds apiece, yet from a distance they resembled threads compared with the immobile black hulk. After ten minutes of coaxing, the ship finally slid four feet, then stopped. The sudden movement caught one of the winch crews by surprise, and the spinning handles whipped around like scythes, killing two of the men and stampeding the spectators. Brunel called off the attempt. Nearly three months of tugging and pushing were to ensue before the great ship at last floated free.

The whole troubled history of the *Great Eastern* is one

At sea on a hopeful early voyage, the ship dwarfed all other vessels, with twice the length and triple the tonnage of any steamship afloat. Driven by screw, paddle wheels and rarely used sails, she made 15 knots.

of dizzying expectations left in tatters. Over her 30 years of existence, she repeatedly provided those "fascinating occasions when grandeur and the ridiculous are linked in grotesque partnership," in the words of historian George S. Emmerson, a chronicler of those occasions.

In both scale and notoriety, the *Great Eastern*'s only rival was Noah's Ark. She was the first luxury liner, a paddle-wheeled monstrosity conceived barely 20 years after the first powered crossing of the Atlantic. Defenders hailed her as the crowning achievement of civilized man, a "wise and obedient fulfillment of the designs of Providence." Walt Whitman and Henry Wadsworth Longfellow immortalized her in verse. Her detractors, meanwhile, predicted she'd never stay afloat. "Vast toy. No substance," Herman Melville grumbled to his journal in 1857.

In fact, the *Great Eastern* successfully embodied many of the principles of advanced shipbuilding. Yet during her brief career on the seas, as calamity followed calamity, she came to be seen as cursed. Only after a financially ruinous period as a luxury vessel was she matched with the mission for which she was uniquely suited, a mission that, like construction of the great ship itself, had been widely viewed as foolhardy: the laying of a telegraph cable across the Atlantic Ocean.

The man whose imagination and sheer force of personality brought the *Great Eastern* into being was perhaps the most renowned engineer of his day—the "Little Giant," builder of the world's fastest railroad, the world's longest tunnel, the world's most daring bridges. Arguing that wide-set wheels would let travelers write in their diaries and sip coffee unperturbed at 45 miles per hour or more, Brunel had placed the rails of his Great Western Railway seven feet apart, not the standard four and a half. In the 1840s this stubborn adherence to first principles, not common practice, triggered England's bitterly waged "Battle of the Gauges," which Brunel eventually lost. Most of his ventures lost money, sometimes in unheard-of amounts. But, as railroad superintendent Daniel Gooch, later a director of the Great

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Eastern Steamship Company, wrote: "Great things are not done by those who sit down and count the cost of every thought and act." Yet beneath all the brilliantly reasoned engineering justifications for his schemes, Brunel harbored—as he once confided to his diary—a "self-conceit and love of glory."

Much of Brunel's fame derived from a pair of steamships he designed, each in its day by far the world's largest. He had conceived the *Great Western*, a 236-foot, oak-hulled paddle steamer launched in 1837, as a transatlantic extension of the London-to-Bristol Great Western Railway. Six years later, his 322-foot *Great Britain* featured all sorts of innovations: a propeller instead of paddle wheels, an iron hull (at a time when ironworking was still an experimental craft) and tonnage more than double that of its rivals. Brunel designed their hulls more like bridges than like conventional wooden sailing ships, which were beset with problems as they approached lengths of 200 feet.

Carrying her own coal to Australia and back

In 1852, when Brunel first sketched the dimensions of the *Great Eastern* in a notebook, gold had just been discovered in Australia, and a wave of emigration had begun. A 700-foot ship, he calculated, was the smallest vessel possible that could carry her own coal on a trip to Australia and back without having to waste time stopping to refuel. Earlier steamship builders had assumed that a huge boat would require a huge load of coal, but Brunel understood what today's supertanker owners all know: the larger and longer a well-shaped hull is, the more efficiently it and its cargo can be pushed through the water. Brunel later predicted that his monster ship's economies of scale would let her earn back her $3 million cost in two and a half years.

From the start of construction in 1854, the goings-on at John Scott Russell's London shipyard neither looked nor sounded like anyone's idea of maritime construction: gangs of men maneuvering thousands of 700-pound iron plates, hammering rivets and welding enormous shafts, some of them the largest metal forgings ever attempted. The huge black shape slowly rising above the marshy Isle of Dogs was so immense it defied comprehension. It seemed, wrote one observer, to "weigh upon the mind as a kind of iron nightmare."

The ship was to be a technological marvel. The engines to turn her two giant 58-foot paddle wheels and her novel 24-foot propeller, it was said, could power all of Manchester's thriving cotton mills. Without a steam assist, 150 seamen would be needed to weigh anchor. She was intended to carry 4,000 passengers in five onboard hotels, nearly double the accommodations of the 1930s' *Queen Mary*. At the outset, however, only 300 cabins were fitted out. Also shelved were such Brunelian innovations as an electric floodlight high at the mast to project the ship's compass onto the deck below; a pump to pour seawater continuously over a thermometer on the bridge, alerting the helmsman to approaching icebergs in darkness or fog; and a pair of 100-foot steamers to be hung from cranes on each side like dinghies.

Even without these extras, the *Great Eastern*'s construction was dogged by cost overruns, delays, and increasingly bitter disputes between Brunel and Russell. Brunel was never a compromiser. "The wisest and safest plan in striking out a new path is to go straight in the direction we believe to be right," Brunel advised Russell a trifle condescendingly, "and without . . . any fear of the consequences." Russell was already heavily in debt, and Brunel's never-ending design changes were worsening matters. As construction stretched to two years, then three, Russell began diverting his yard workers to other boats, while remaining—depending on the biographer you read—either unfailingly courteous or mockingly insouciant. Brunel had no time for Victorian obsequiousness. "I wish you *were* my obedient servant," he exploded in response to one of the shipbuilder's handwritten excuses. "I should begin by a little flogging."

The disastrous first launch attempt, followed by nearly a dozen more in 1857 and early 1858, brought ridi-

With top hat and cigar, Isambard Brunel looks small but proud beside links of huge chain needed for ship.

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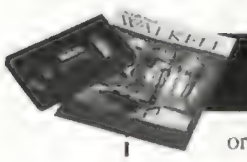

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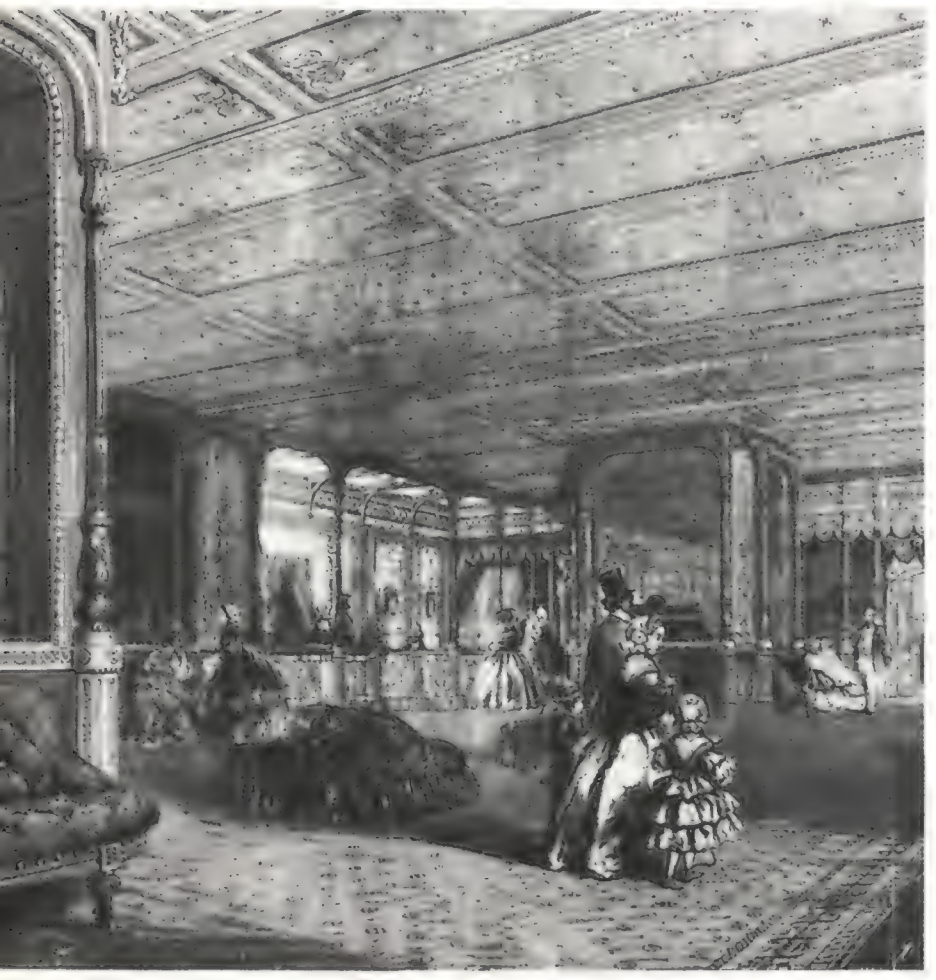
cule in the press. Mockers called the ship, née *Leviathan*, the "Leave-her-high-and-dry-athan." Brunel also had to contend with a flood of unsolicited advice. One correspondent suggested unsticking the ship by ordering 2,000 troops to jump up and down on the deck in unison. Another recommended filling her hold with a lighter-than-air gas.

By the time a battery of hydraulic rams and winches succeeded in floating the great ship, the procedure had cost $2,000 a foot. The syndicate that owned the *Great Eastern* was ruined. For nearly a year the unfinished vessel, now dubbed the "Great Iron Cliff," sat idle while fresh investors were rounded up. Brunel's health, meanwhile, was failing. Less than two years after he cockily posed for a picture smoking a cigar next to the hauling chains, the now frail engineer hobbled aboard his "great babe" for the last time as she awaited her shakedown cruise. He collapsed minutes later, the victim of a stroke, and was carried ashore.

Four days later, on the steamship's first foray into the English Channel, her deck laden with dignitaries, an errant steam valve caused a funnel casing to explode. The blast killed several people, twisted the deck and made a shambles of the ornate grand saloon below. The ship limped back to Southampton in disgrace for the first of many long and expensive repairs. Within days of hearing the news, Brunel died—his heart broken, everyone agreed. "Brunel was the right man for the nation," the *Morning Chronicle* observed in its obituary, "but unfortunately, he was not the right man for the shareholders."

After his death, ignoring a publicized suggestion that the *Great Eastern* was suited to be a warship—she could work her way up to top speed and ram her prey—the new owners launched her into a career as a tourist attraction. This started while repairs were still going on because the site of the explosion and deaths was a popular draw. Periodically, shortages of money forced the layoff of repair crews, but the ship's band and the stereoscopic photographer never missed a paycheck; they, at least, helped bring in revenue.



With grand saloons and plush staterooms, the *Great Eastern* was the forerunner of all modern luxury liners.

Footraces and impromptu bowling

The ship's reputation scared off many prospective travelers. In May 1860, two and a half years after her ill-fated christening, the *Great Eastern* embarked on her maiden voyage across the Atlantic. On board were 35 paying passengers and 418 crew. Among the former, despite his own misgivings, was a *New York Times* reporter and civil engineer, Alexander Holley, who bylined his stories "Tubal Cain." The day after her June arrival in New York, his detailed account of the world's first ocean-liner cruise filled the newspaper's entire front page and then some. Holley regaled his readers with descriptions of impromptu bowling alleys set up in "vacant lots," footraces run around the deck's perimeter, a quarter-mile per lap, and an awe-inspiring paddle-engine room "as fitting a scene for the poet as the engineer." There were even, he reported, sheep and cattle pens on the flat open deck to provide fresh meat.

In New York Harbor the world's mightiest ship was greeted by cheering onlookers and deafening salutes from a spectator fleet. Shore concessions sold Great Eastern beer and Great Eastern lemonade. Schools were canceled and courts adjourned. The *Great Eastern*'s welcome wasn't unanimous, however. A *New York Times* editorial described her as a "most deceitful and inhuman monster" that "blew up her passengers the minute she got any of them on board." It also lamented that repairs had lessened the chance she'd blow up New York's corrupt municipal leaders in like fashion during welcoming festivities.

Although a half-million people had greeted her arrival and special trains had brought sightseers to New York for the occasion, the steamship company's offer of self-guided tours at a dollar a head drew only 1,500 takers the first day. The expected crowds did not materialize until the price dropped to 50 cents. Over the next four weeks, the ship earned $72,000 as a dockside attraction, more than ten times what she'd earned as a transatlantic liner.

"The Great Eastern is only three or four times larger

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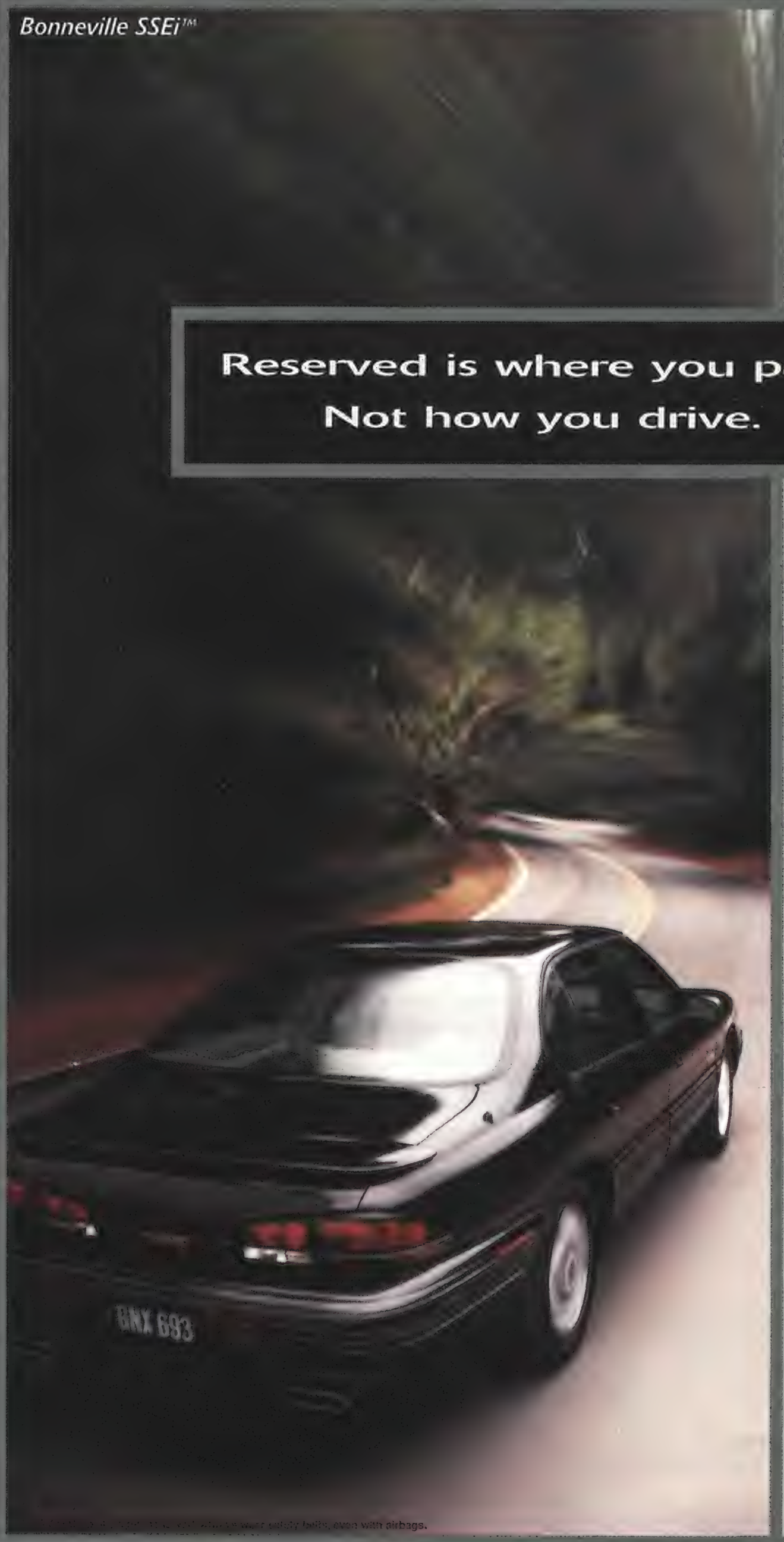

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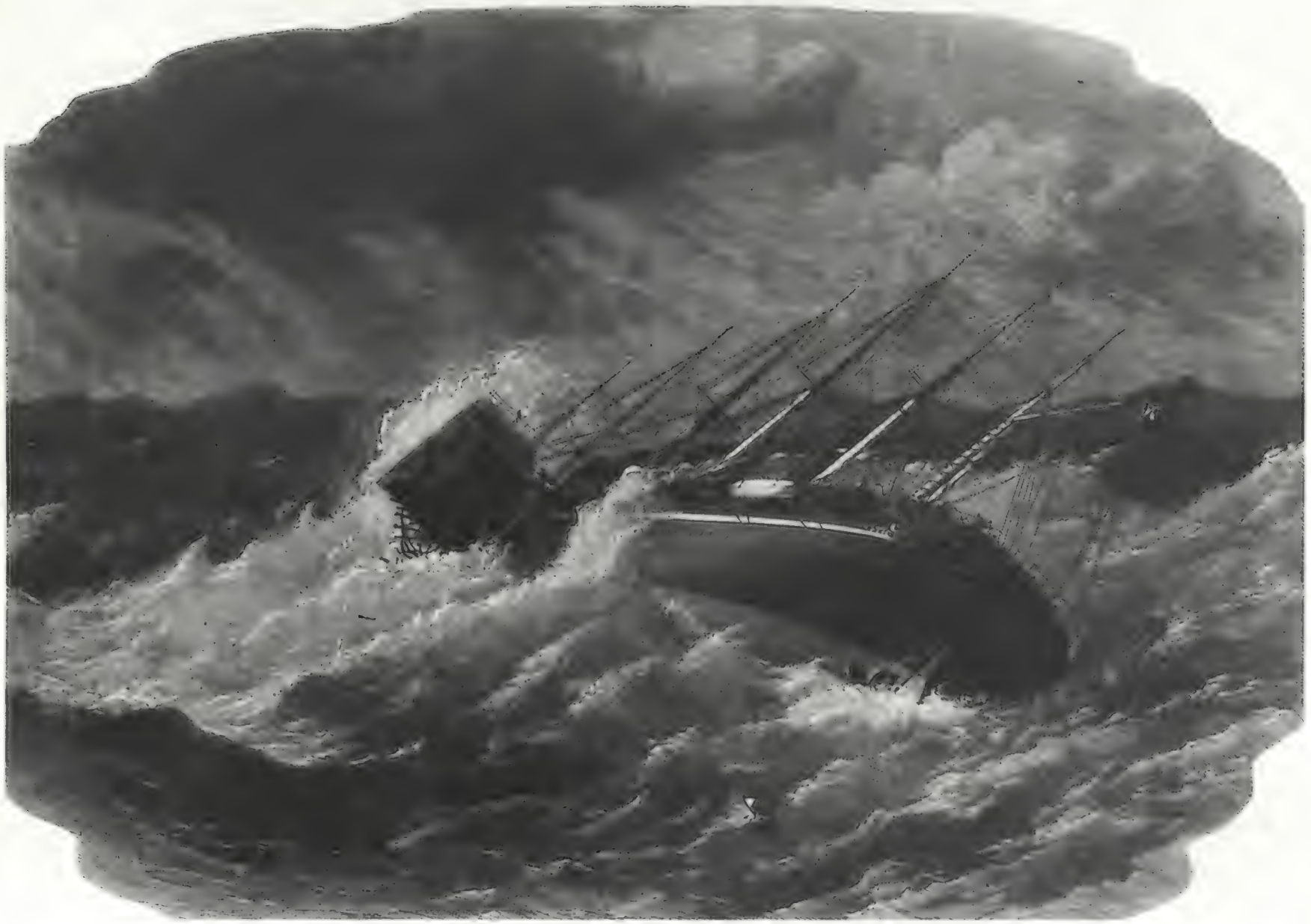

In one early mishap, Brunel's new creation broke her rudder and was almost bowled over by howling winds and heavy seas. After some makeshift repairs, she was still able to steam home at a respectable nine knots.

than the largest ships, but she seems twenty times larger—as if she differed in kind as well as in degree," wrote a *Harper's Weekly* columnist. "I confess my first feeling [on boarding] was, that nothing could persuade me to go to sea in such a ship, for it seemed like embarking in the largest Lowell cotton factory." Even so, the directors announced a three-day excursion to Cape May, New Jersey, at $10 a ticket; the price was almost offensively steep, but free bedding and inexpensive meals were promised. And so, on a brilliant August afternoon, to the accustomed cheering and salutes, the *Great Eastern* steamed majestically past Sandy Hook with 2,000 excited passengers on deck, including much of New York society and most of its press corps.

The ship returned to port two days later without having killed any passengers, but otherwise the cruise was a disaster. Passengers began suspecting trouble when the desultory ship's band had tried peddling sheet music of "The Great Eastern Polka" between numbers. Only as night fell did the excursionists first learn that the ship had accommodations for only a few hundred people, not the thousands of commodious staterooms described in advance publicity. Toward midnight, when stacks of mattresses finally appeared on deck, the bidding started at 50 cents and rose quickly. In a breach of etiquette, men and women alike were forced to sleep on deck, the scene reminding some of a hospital ward strewn with victims of an epidemic. There were 300 cabins belowdecks, but only the specially favored got to sleep in them.

Then the rain started. In the morning, according to another *Times* front-page story, "hundreds of haggard, unshaven, wiry, feverish persons, blackened with the cinders which had bedewed them in their sleep . . . rushed about the deck." Surly waiters demanded 25 cents for a cup of ice water. Coffee was unobtainable, the toilets a disgrace. One indignant passenger wrote: "A general famine would have overwhelmed all hands if the ship had been a meal and a half away from land." At Cape May, excursionists jumped ship in droves.

Brunel's old friend Daniel Gooch, one of the company directors aboard, later wrote of this first attempt at

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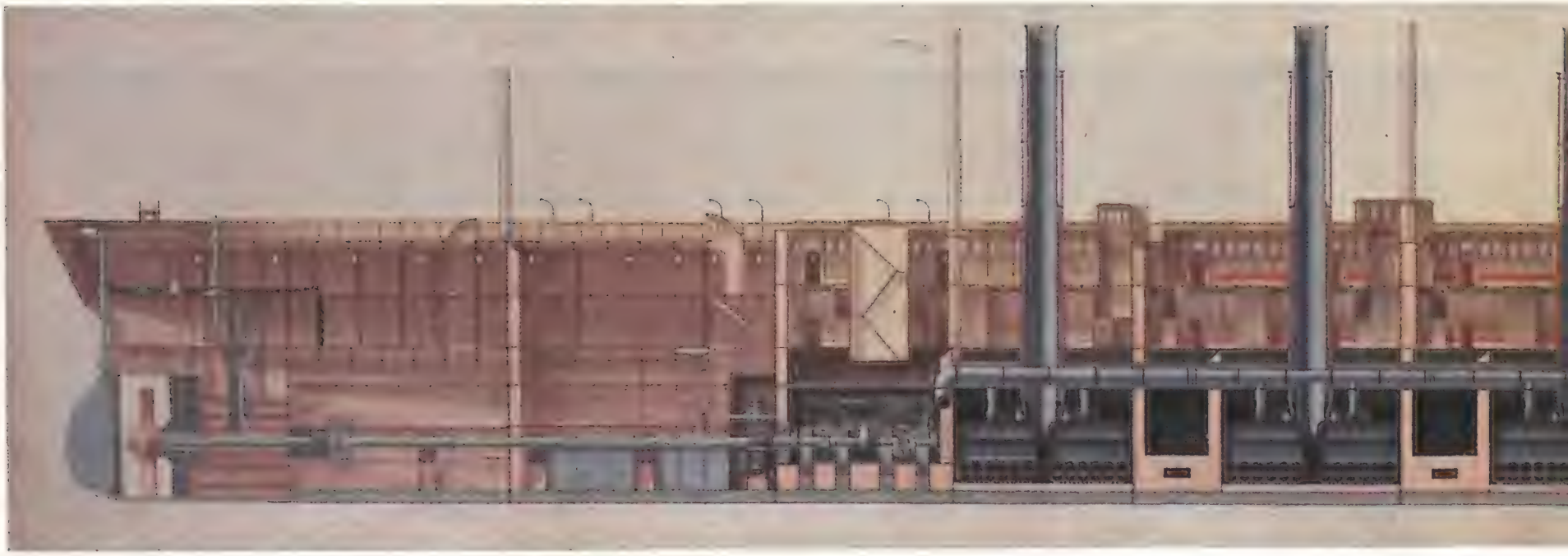
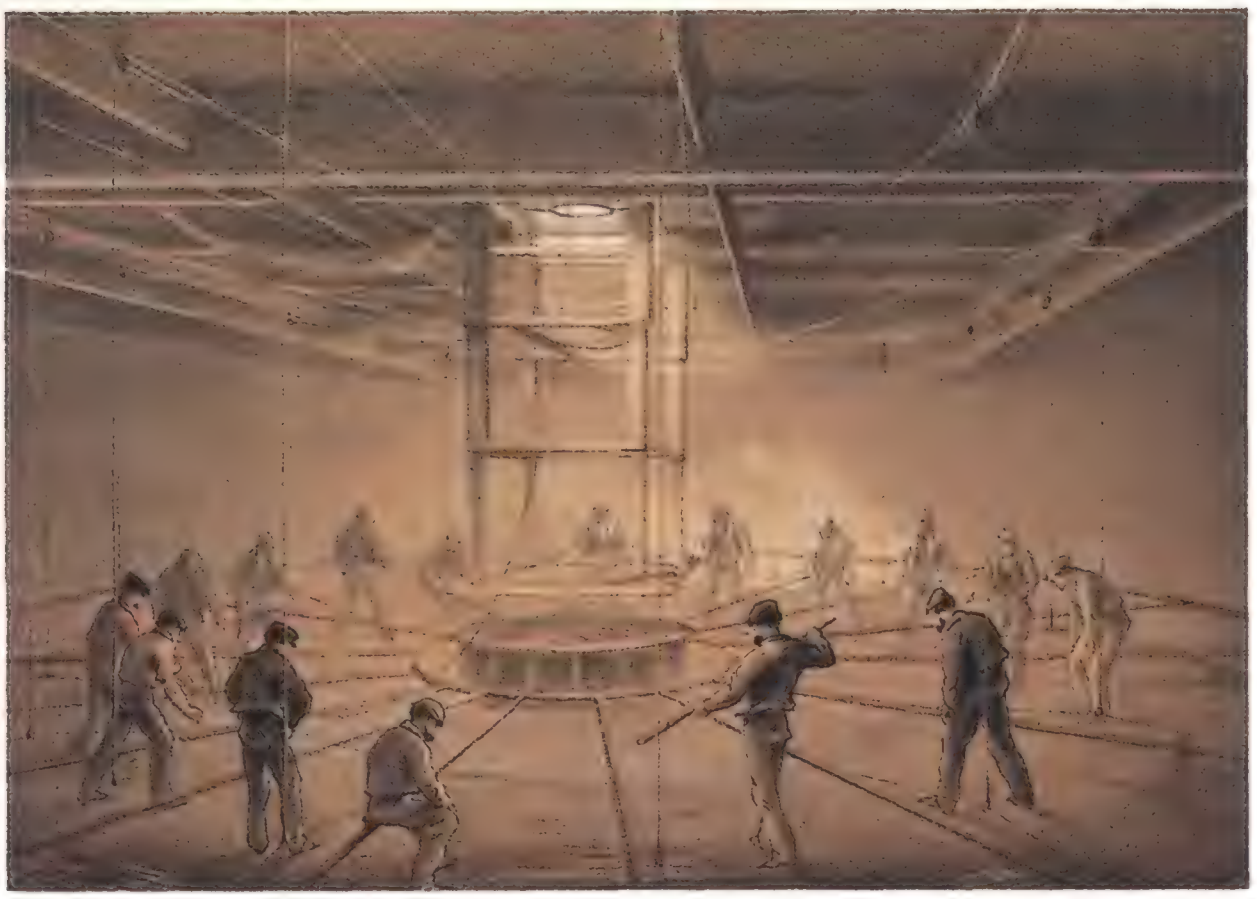




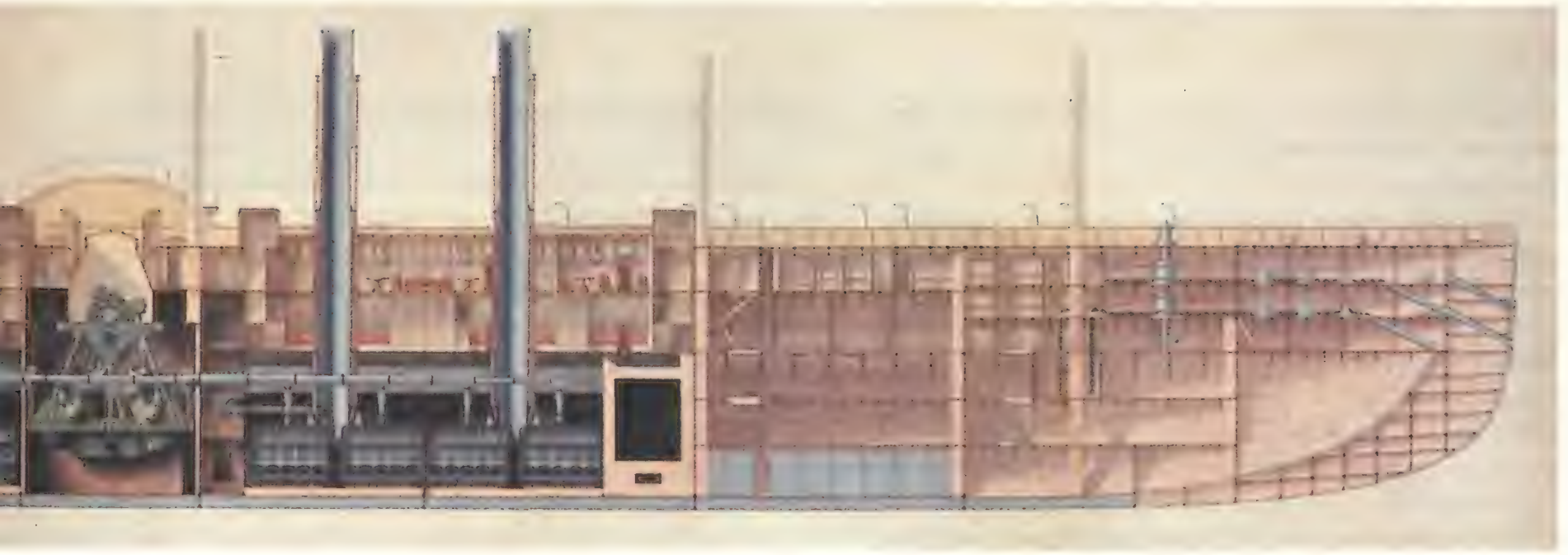
Cutaway view shows the propeller, the drive shaft leading to the 1,600 hp engine, ladders down to engine, three coal bunkers and five narrow funnels.

During historic stint trying to lay first transatlantic cable, 16 men monitored the hold to keep the cable from tangling as it was fed out of what had been the grand saloon and up through a hatch onto the afterdeck. There, from the stern, it was unwound, then fed on down to the bottom of the ocean.

turning the *Great Eastern* into a showboat: "I cannot say, now it is all over, that we were very clever at our work." The widely publicized overnight fiasco further sullied the giant steamer's ill-starred reputation and helped doom later attempts to promote her as the epitome of maritime luxury. Only 20 passengers booked passage for her return to England; she carried no cargo at all.

The great ship might have recovered from ill luck and these managerial blunders, had she not had defects of her own. She was so big, so new, and so filled with technological complexities that she was forever being laid up for repairs. No drydock in the world was big enough to hold her. When a submerged rock tore an 86-foot gash in her hull during a return voyage to New York, an underwater workroom had to be improvised and affixed to the outer hull before repairs could begin. (Watertight compartments inside Brunel's ingenious double hull kept the ship afloat with only a slight list.)

Brunel had predicted the ship would be as stable as a house, her hull spanning several wave crests at all times. But when her 30-ton rudder broke in a gale off Ireland in 1861, the mighty ship rolled like a dory. Her lifeboats and both paddle wheels were swept away. Of the dozens of passengers who suffered broken limbs, many were injured by careening furniture in the grand saloon, where they'd taken refuge. Adding to the horror, a terrified steer crashed through the saloon's glass skylight and dangled upside down above the chaos. Two hundred gallons of fish oil, meanwhile, burst from ruptured tanks and poured into the hold, making life aboard still more intolerable. That the ship was able to steam back to port at a brisk nine knots under propeller power alone, once her rudder was repaired, was a tribute to her design that only an engineer could fully appreciate.



Amidships four 1,000 hp steam engines drove the giant paddle wheels. The ship had six masts: half for square sails, the rest rigged fore and aft.

When the cable broke, 600 miles from Newfoundland, the ship dropped a large metal buoy to mark the spot and spent nine days trying to retrieve the cable with grapnel lowered from the bow. Eventually the attempt was abandoned; the whole process began again with a new cable.

The biggest disappointment of all was the *Great Eastern*'s speed. Though she was briefly the fastest steamship ever built, she never approached the 20-knot cruising speed that Brunel had promised. Her giant steam engines, as impressive as they appeared, were nonetheless too feeble to drive the ship's great bulk efficiently. Brunel's vision had outstripped the technical know-how of mid-19th-century England: the ship was simply too big for her time.

Perhaps the *Great Eastern* could have turned a profit had she hauled cargo in bulk or steerage-class immigrants to America. Instead, the succession of syndicates that owned her stubbornly held to Brunel's original conception of the ship as a first-class passenger liner. An exception was made in 1865, when she was enlisted to run an errand that became, in hindsight, her one moment of glory. Like a prodigal doing penance for a wayward past, the *Great Eastern*'s attempt to lay the Atlantic cable helped redeem earlier years of folly.

In 1851 Dover and Calais had been linked by an underwater telegraph cable. The Victorian world was entranced by the novelty of lightning-fast communication between distant places. Though pessimists deemed the idea of spanning the Atlantic a "sink for capital, and task for lunatics," others argued that a transatlantic cable would be a "mighty engine for conveying thought," that it would unite the continents in an instant, create mutual understanding and render war obsolete. American industrialist Cyrus Field, who had once been a passenger on the *Great Eastern*, pushed the venture. Field, who had earlier invested in a joint British-U.S. transatlantic attempt that had failed after three weeks, realized that the ship could carry the entire 2,500-mile cable in her hold. In 1864 Field helped organize a new syndicate that

bought her at auction for a mere $125,000; she had, after all, earned more than $70,000 just as a dockside curiosity in New York.

Shipyard workers ripped out staterooms and walnut-and-velvet saloons, replacing them with tanks big enough to hold 7,000 tons of looping cable. Heavy-laden and drawing a record 35 feet, in July 1865 the ship left Ireland with Field and the steadfast Daniel Gooch aboard once again. Also on hand was William Howard (Bull Run) Russell, a renowned war correspondent for the *Times* of London who had been searching for material worthy of his page-one talents.

Cable-laying was slow, delicate and tedious work, a bit like laying out a strand of decorative cake frosting, but with a 30,000-ton tube. Backtracking to reel in faults in the submerged cable was more arduous still. To Bull Run Russell's surprise, the *Great Eastern* proved the perfect ship for the job: "So delicately did she answer her helm and coil in the film of thread-like cable over her bows, that she put one in mind of an elephant taking up a straw in her proboscis."

Two-thirds of the way to Newfoundland and two miles above the ocean floor, the telegraph cable parted without warning, its end splashing into the sea. The crew dragged the bottom with hooks at the end of chains six miles long, but without success. After nine days of grappling, the *Great Eastern* turned and headed at full speed for England.

The following summer, trailing a stronger cable, she steamed triumphantly into Newfoundland's Trinity Bay after an uneventful two-week passage. In lieu of a victory lap, Captain James Anderson astonished spectators by using paddles and propeller to spin the great ship in place like a weathervane. The *Great Eastern*'s feat set off jubilation on both sides of the Atlantic. "The work is the grandest which has been accomplished in our age," declared the *New York Sun*. After President Andrew Johnson and Queen Victoria exchanged telegrams, the cable's owners began charging everyone four shillings a word, and 50 messages were sent the first day.

Alas, the great ship's one maritime triumph proved brief. She laid several more oceanic telegraph cables, including a 3,000-mile link from Bombay to Suez, but was soon eclipsed by newer, more-efficient steamships built expressly as cable-layers. The great iron ship had one last fling as a passenger liner. The curse of the *Great Eastern* was apparently not well known in France. In 1867 the government of Napoleon III had her elegantly refitted as a luxury liner; it expected to make back the investment with a single load of rich American tourists eager to visit Paris for the International Exhibition of 1867. With 3,000 berths available, only 191 passengers could be found for the return voyage, and the scheme lost close to $100,000.

One of the round-trip voyagers was a young novelist named Jules Verne. Duly impressed by the ship's breath-taking scale, he later wrote a melodramatic novel called *A Floating City*. Verne used the *Great Eastern*'s ominous reputation as a plot device: during the climactic duel on deck, the ship's cursedness brings on a freak storm that

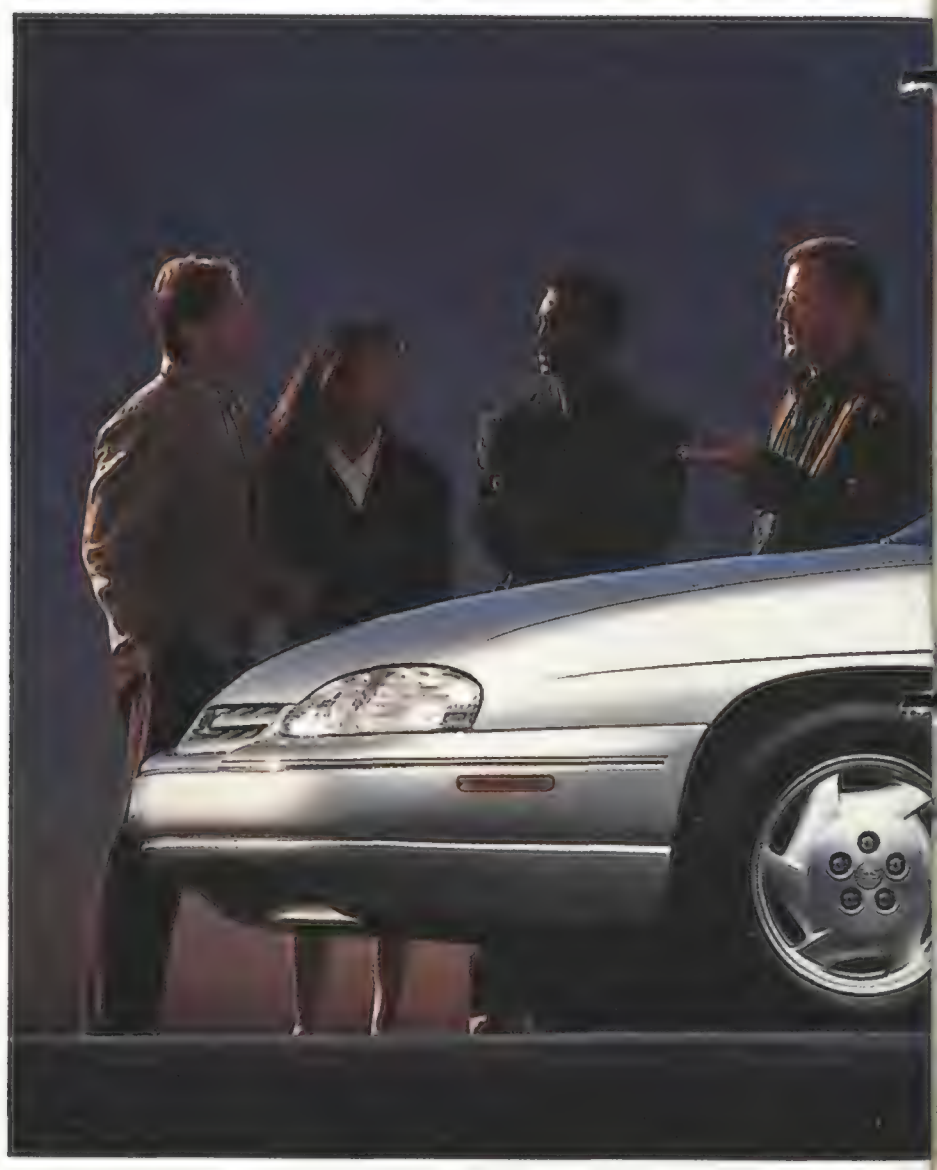
Ship's bitter end as a shorebound Liverpool amusement park had been prophetically caricatured back in 1858.

fells the villain when lightning strikes his upraised saber.

She never carried another paying passenger. After years spent idle and corroding, in 1886 the ship was converted by Lewis's, a Liverpool department store, into a floating amusement park. Swiss yodelers and lady boxers performed in a thousand-seat music hall while trapeze artists swung high amid the rigging. Sideshow curiosities, such as "Bob, the Missing Link," held court in what had once been the forward cable tank. To add to the ship's entertainment value, the impresarios ceded one corner of her deck to a Gypsy encampment.

"Let her be decently buried beneath the wild billows of the great Atlantic. I for one will contribute to her funeral expenses," mourned a visitor who had seen her decked out in flags as she embarked to fanfare on a transatlantic voyage in 1861. Instead, the *Great Eastern*, still by far the world's largest ship, was eventually auctioned off as scrap. Giving Brunel's masterpiece a fitting epitaph, the ailing Daniel Gooch wrote: "Poor old ship. You deserved a better fate."

An interesting thing happe
people about their idea of a
You end up building it.



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Musée d'Orsay, Paris

By Helen Dudar

Impressionism's hard yet glorious formative years

The 1860s were a lean decade, but the artists found their inspiration in outdoor light, Japanese prints and the world as it really was

In our time, they are household familiars, their artistry instantly recognizable, unfailingly alluring. We pause to admire a grand vista of beach and sea shimmering in a golden summer light; a glimpse of walkers in the woods set down in a few crafty strokes of color; an exuberant burst of flowers. The magic word is "Impressionism"—guaranteed to entice large, barely manageable crowds to large, special exhibitions; certain to seduce big spenders at auction. We hear that last summer a collector acquired a Monet painting of a cluster of poplar trees with a bid of £4.4 million, and no one is surprised.

Once, these artists were young, scorned or ignored, and hungry—in want of both food and fame. At times, Monet actually lacked money to buy bread or paints, and his friend Renoir was often in similarly dire straits. The artists, most of them, were in thrall to the notion of painting outdoors—*en plein air*—of capturing the play of light and shadow in agitated stabs of brushstrokes that unappreciative critics found crude. A couple of them, Cézanne and Pissarro, laid on paint with a palette knife in shockingly thick slabs. Most tended to use colors that the unaccustomed eye found vulgar and garish.

When the weather shut them out of *plein air* and they could not afford the services of a professional model, they turned out beautiful still lifes in unprecedented abundance. Now and then, they painted a portrait in the often vain hope of attracting commissions that might pay the rent. So many of them were refused wall space at the official, aridly academic biennial Salon shows in Paris that one year Napoleon III ordered an exhibition of the rejects—the Salon des Refusés—so that excluded works might have a public showing.

Those harsh and exhilarating early years are explored in "Origins of Impressionism," an assemblage of 175 paintings that can be seen at the Metropolitan Museum of Art in New York until January 8, 1995. The exhibition, sponsored in this country by the Philip Morris Companies Inc., was shown earlier this year in Paris under the auspices of the Réunion des musées nationaux / Musée d'Orsay.

For all the attention that museums have lavished on that outpouring of art, none until now have looked closely at its beginnings. The idea for this show was born six years ago as two art historians labored on an immense, dazzling survey of the works of Edgar Degas (SMITHSONIAN, October 1988). Thinking ahead, Gary Tinterow, a curator of European paintings at the Metropolitan, contemplated taking a sustained look at another Impressionist, Monet, and his early works of the 1860s. He mentioned the subject to his colleague Henri Loyrette, chief curator at the Orsay and a cocurator on the Degas project. Loyrette had been struck, looking at those early paintings, by the problems that the young artists of the 1860s had encountered and by "all the interconnections" among them. Why not expand the show to include the entire galaxy of painters? he suggested.

It would be six years before the gallery walls could be filled—time needed to arrange loans from far-flung museums, more than 70 scattered around the globe, as well as from a number of important private collectors; a full year for the two curators to produce a sumptuous, scholarly catalog (distributed in the United States by Harry N. Abrams). Sitting in his office in Paris one afternoon last July, while lines for the final week of the exhibition snaked down the walkway from the Grand Palais, Loyrette said he was surprised at the generally favorable reception the show had received. Critics tend to claim ennui about the period, assuming an attitude along the lines of "Oh, once more Impressionism, how very boring," Loyrette said, mockingly. "When you are very smart, you don't like Impressionism. But I was surprised that it was even a kind of discovery for them."

When it was first noticed, the young avant-garde we call Impressionist was seen to be engaged in a misadventure described as the New Painting and regularly savaged. The history books settle on 1874 as the formal launch of the movement; that year most of the artists—among them Monet, Pissarro, Degas, Renoir, Sisley and Morisot—borrowed a large empty space for a joint show in Paris. With a few exceptions, the critics hated it; one,

Monet's *Women in the Garden* (1867) was "ignominiously blackballed" by the Salon, the artist would recall.

Musée d'Orsay

In *Young Boy with a Cat* (1869) Renoir broke the rule that male nudes appear only as mythological figures.

lifting the word from a Monet title, dismissively used the term "impressionist" in his review. Although it had turned up before, it would now become a formal label. The word does not begin to encompass the radical changes fostered by the new modern art.

The exhibition narrative at the Metropolitan embraces a ten-year period beginning with the Salon of 1859. A Pissarro was actually admitted that year; paintings by Edouard Manet and a young American émigré named James McNeill Whistler, who was part of the new crowd, were turned down. For that event, 3,045 paintings, hung from floor to ceiling, were to be seen in the cavernous Palace of Industry on the Champs-Elysées; most of them were hardly worth a glance. The critics agreed: "Never had technical skill been so common and grand ambition so lacking. . . ."

Looking back, historians would acknowledge that the event marked the end of an era. For much of the century, French art had resolutely turned to the past. It had been earnest, high-minded, genteel—in some ways in reaction to the 18th-century ancien régime when art was largely expected to please the eye. Big canvases memorialized serious moments in history or in the Bible, or offered familiar tales from mythology. A painter who wanted to show the naked body of a beautiful woman could safely do so with a mildly erotic image of a fleshy Venus. It was also acceptable for Corot, or Millet and others of the Barbizon School, to concentrate on pretty country vistas—works that had a direct impact on the rising generation of painters. But a new world was taking shape that hardly anybody bothered to examine.

The enduring scandals of the adventurous 1860s were probably Manet's *Le Déjeuner sur l'herbe* (*Luncheon on the Grass*) and *Olympia* (which is not in the Metropolitan show). The first, exhibited in the Salon des Refusés of 1863, offered a relaxed, unclothed woman in the company of two fully dressed men; two years later came *Olympia*; utterly deadpan and extremely naked, she faced the spectator—and presumably a paying visitor—and *mon Dieu!* showed a realistic trace of hair in her right armpit.

The women in these paintings were undoubtedly professionals who delivered sexual favors for francs. Indeed, "Olympia" was a pseudonym favored by prostitutes. For years after those two showings, Manet would be the man who "painted such filth" and, hardly less kind, the "terrible realist." The epithets pained him. "They are raining insults on me, I've never been led such a dance," he wrote to his friend Baudelaire.

Manet's picnic inspired other important works. Among them was an enormous Monet woodland setting

A regular contributor to SMITHSONIAN *magazine, Helen Dudar wrote about ceramist Beatrice Wood in March 1994 and the Louvre in December 1993.*

Courtauld Institute Galleries, London

This is one of Edouard Manet's two versions of *Le Déjeuner sur l'herbe*; in both, a nude woman sits near two clothed men and a pile of her clothes. The other, hung at the Salon des Refusés, caused a huge scandal.

for a *Déjeuner*, one-third of which is now lost. The two remaining pieces are stunning: a gathering of fashionable men and women, all properly clothed, spreading their lunch on the grass, looking as if they have just been interrupted by the fellow with a palette and easel. Another reference to Manet, Cézanne's startling *Une moderne Olympia* (*A Modern Olympia*), rendered in muddy colors, was made "modern" by its explicitness as well as its style. The setting is plainly a bordello. Seated in the foreground, gazing at the naked woman curled up in bed, is a man, unmistakably a client and, contemporaries concluded, unmistakably a self-portrait. "Modern" was a key word in Cézanne's *Olympia*. The city and its life were changing swiftly and dramatically. At the emperor's command, Baron Haussmann was remaking Paris, slashing grand boulevards through its poor, decayed neighborhoods and lining them with imposing buildings for the convenience of its more prosperous citizens. Actually, the young artists did not get around to examining these new urban vistas until the next decade, but change was in the air. There were new public gardens crowded with families on weekends, and fashionable summer resorts patronized by the bourgeoisie. There was also poverty and pain, but this young generation was largely dedicated to reporting on life's pleasures. To be sure, Degas painted *La Repasseuse* (*A Woman Ironing*), a weary-looking servant at her ironing board—in delicate whites, grays and pinks—but in other works he captured the excitement of the racetrack and the solemn beauty of musicians playing for the ballet.

The new painters who lived in or found their way to Paris in that period were all in their 20s and early 30s,

Manet turned tradition inside out with *La Musique aux Tuileries*—"history painting without a major historic event," says exhibit cocurator Henri Loyrette.

National Gallery, London

Metropolitan Museum of Art

Nationalmuseum, Stockholm

In 1869, Monet and Renoir painted La Grenouillère, a resort on the river Seine, from the same vantage point (the Renoir is at right). Both were poor, running short of money for paint; Renoir brought bread to Monet.

and they would become friends, allies or at least casual acquaintances. Degas and Manet first met while exploring the Louvre. Cézanne and Pissarro became friends and occasional painting companions as fellow students at an art school that provided live models at modest rates. Monet, Renoir and Sisley all worked together at another studio.

Some of them took painting excursions together. One summer, Monet and Renoir stood on the shore of the river Seine at a resort spot known as La Grenouillère and in glistening jabs of color recorded similar scenes of vacationers gathered by the water (above). At the time, their lives were far different from the gaiety of these paintings. Renoir was staying at his family's home in Voisins-Louveciennes, while Monet was living nearby in the small village of Saint-Michel. Both scrimped for food and supplies; Renoir brought bread from his parents' home to Monet. "For eight days," Monet wrote to Frédéric Bazille, "we had no bread, no wine, no fire for cooking, no light. It is terrible. . . . As always, I have to stop for lack of paint."

Bazille and Alfred Sisley also worked together. Once they shared a dead heron as a subject; each produced a still life of the bird, while their friend Renoir painted Bazille in the act of painting the heron.

Bazille would never match the fame of his artist friends—he died before his 30th birthday in 1870 in the Franco-Prussian War. But for a time, he was central to their lives. He came from a wealthy family, could afford decent quarters and was generous about sharing space, ideas, models, the coal stove and small sums of money. One of his late paintings is an homage to that brotherhood: *L'Atelier de la rue La Condamine* (*The Studio in the rue La Condamine*), a scene at his workplace (p. 88). Most of the pictures on the wall are his, but they keep company with a Renoir rejected by a Salon and a Monet still life. Palette in hand, Bazille is standing at an easel holding one of his paintings; Manet appears to be commenting on the canvas, and Zacharie Astruc (or possibly Monet) is peering over Manet's shoulder. The man on the stairs, probably Renoir, is leaning over the banister, talking to Sisley. Manet himself is said to have painted the tall, lean figure of Bazille.

Even before his two "shocking" unclothed ladies were shown, Manet had turned out a painting that would forever alter the way artists looked at life around them. His 1862 piece, considered a seminal work, is *La Musique aux Tuileries* (*Music in the Tuileries*), a gloriously crowded, tradition-shattering look at Parisians gathered for a concert in the grand public gardens. The piece is crammed with figures: children playing, fashionable women in summer costumes sitting under airy foliage, men in trim black suits, some of them instantly recognizable to the knowledgeable—Offenbach, Baudelaire, Fantin-Latour, relatives of Manet, the artist himself. Loyrette describes the work fondly as "history painting without a major historic event." This, of course, was not approved. The picture "hurts the eye," one critic grumbled, "as carnival music assaults the ear."

The 1859 Salon had been revolutionary in one respect; it was the first exhibition to include photography as art. It was surely that event, together with a growing

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Cézanne's *La Pendule noire* (*The Black Clock*), from about 1870—its strong horizontals and verticals contrasting with the shell and other organic forms—was a major turning point after his emotional paintings of the 1860s.

popular interest in the camera, that transformed the way the new artists began to populate their paintings. The imagery in Monet's *Femmes au jardin* (*Women in the Garden*), like his picnickers in the woods, is radical: the people appear unposed. The models may have sat or stood motionless for hours, but they have the look of figures frozen in a sudden click of a camera. They are also unconventionally oversize, almost heroic in scale, everyday people set down as if they were large figures of history. Of course, the most familiar and striking element of the Monet is the play of sunlight and shadow on the people and their surroundings. Completed in 1867, it was his first work to have been painted entirely outdoors—a total break with tradition.

By custom, an artist set out to capture the look of a landscape in a drawing or possibly an oil sketch, and later went to work in the studio to paint an idealized image of the scene. In addition, those in the older generation who emphasized the importance of "line" had struggled to achieve a smooth, perfect finish with no hint of the physical act of painting. Their juniors saw no point in disguising the process. To them, color was an element created and modified by light; it was to be set down on canvas as it appeared to the artist laboring under a hot sun or a clouded sky, recorded in rapid, visible little brushstrokes, or as the great Impressionist historian John Rewald once put it, "dots and commas to capture the glistening atmosphere." The result was a deliberate sketchiness—a sketchiness that was seriously defective to early critics but beguiling to the modern eye.

Monet was apparently maniacal about working outdoors. One winter, on a day "cold enough to split rocks," a passing journalist spied him in the city of Honfleur and later reported, "We perceived a foot warmer, then an easel, then a gentleman bundled up in three overcoats, gloves on his hands, his face half frozen; it was Monet studying an effect of snow."

Inevitably, some of the new approaches to art were unexpected gifts from a distant, almost unknown land. In 1854 Japan began trading with the West; exotic Oriental exports arrived in France, including works of art, at first usually inexpensive, brilliantly colored wood-block prints. The impact was profound: *Japonisme* had reached Paris, and old as well as young painters began to absorb new conventions, new ways of conveying reality, and a taste for high-pitched color.

Western landscapes and seascapes habitually ended with low horizons and great expanses of sky. Japanese artists liked huge sprawls of land or sea ending in high horizons, bordered by thin slabs of sky—a startling change of vision. European compositions usually clung to symmetry. With high sophistication, the Japanese often arranged figures and objects asymmetrically. Finally, there was the surprise of figures seen from a distance; from the Japanese, the French discovered that a human presence could be suggested in a few canny little strokes of color—swift abbreviations rather than meticulously rendered miniatures.

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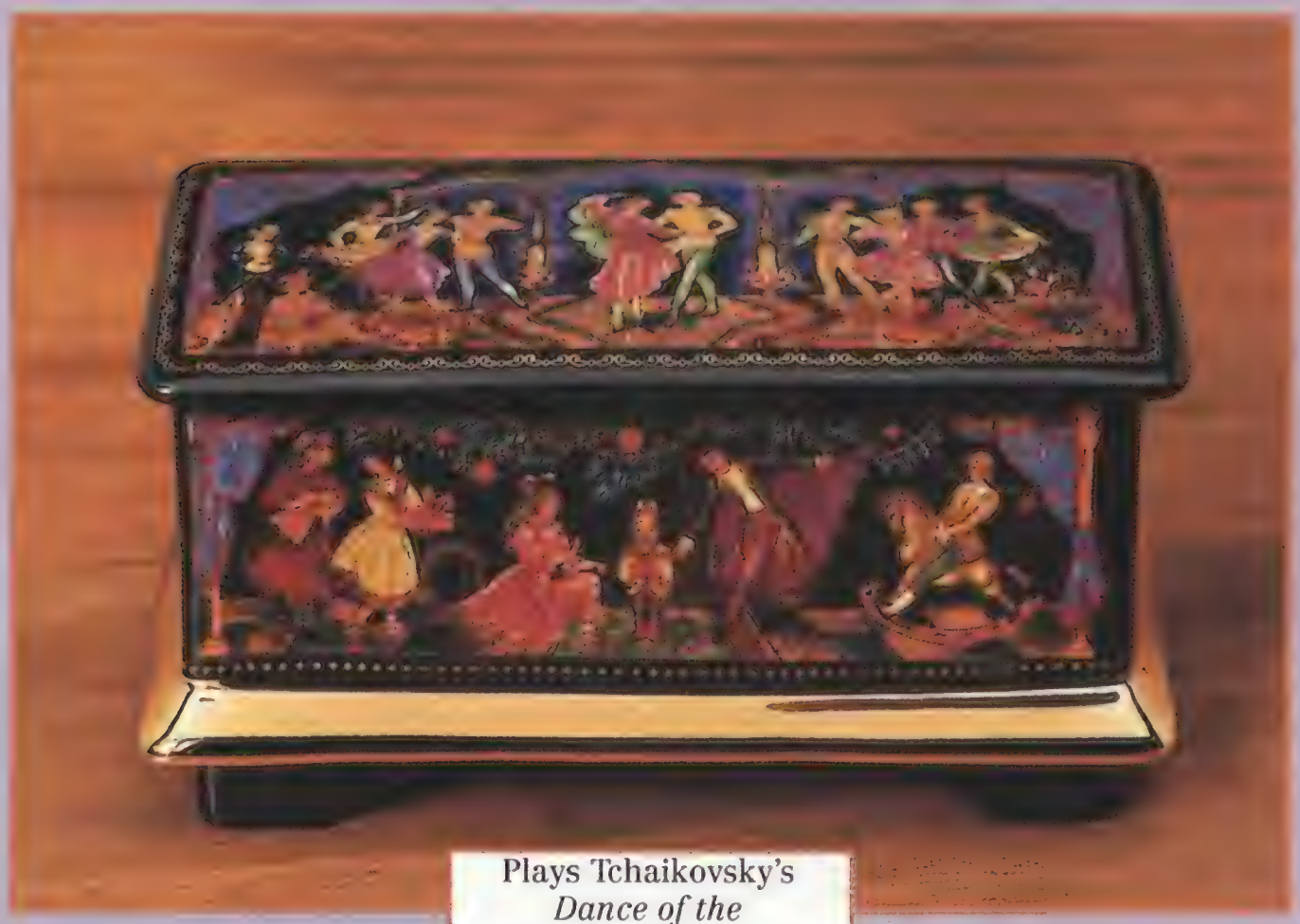

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If color obsessed the new artists, so did its absence. Monet, Manet and Cézanne were transfixed by the problems of conveying bright white on canvas. In his old age Cézanne would recall that years before, he had been driven to paint "tablecloth[s] of fresh snow." That is pretty much what he did in *La Pendule noire* (*The Black Clock*), an apparently symbolic and frugal assemblage of items in stark contrast to the lush floral exercises practiced by his colleagues. The clock has no hands, the glass vase is empty, the big shell suggests some exotic, ravenous creature—and the lights and shadows of the tablecloth could be a field of fresh snow.

The picture may have been painted for Emile Zola, who had been Cézanne's friend since their school days in Aix-en-Provence and was the first owner of the piece. Impressionist homages to Zola, including a fine portrait by Manet, turn up with some frequency in the 1860s, and with reason: before he concentrated on writing novels, Zola was an influential journalist, an intellectual who understood and was a fierce partisan of the new art.

Years after *La Pendule noir,* Zola wrote a novel called *The Masterpiece,* whose artist-hero, Claude Lantier, was an amalgam of Manet, Monet and Cézanne, a portrait that Cézanne found so offensive that he ended their friendship. In one sequence, the artist is painting a scene with four figures in a forest clearing. The man posing for Lantier wants to know what he will call it. "*Plein air,*" the artist replies. The phrase is meaningless, the model objects. "It doesn't need to mean anything," Zola's Manet-Monet-Cézanne declares, with the dogged focus, the assurance, that kept these artists at work. "A man and a couple of women resting in the woods, in the sunshine. What more do you want? Seems to me there's enough there to make a masterpiece."

In 1869, the wealthy and generous Bazille painted his friends at his studio, including Renoir on the stairs, speaking to Sisley, below; Manet, in a hat, watching Bazille at the easel; and Edmond Maître at the piano.

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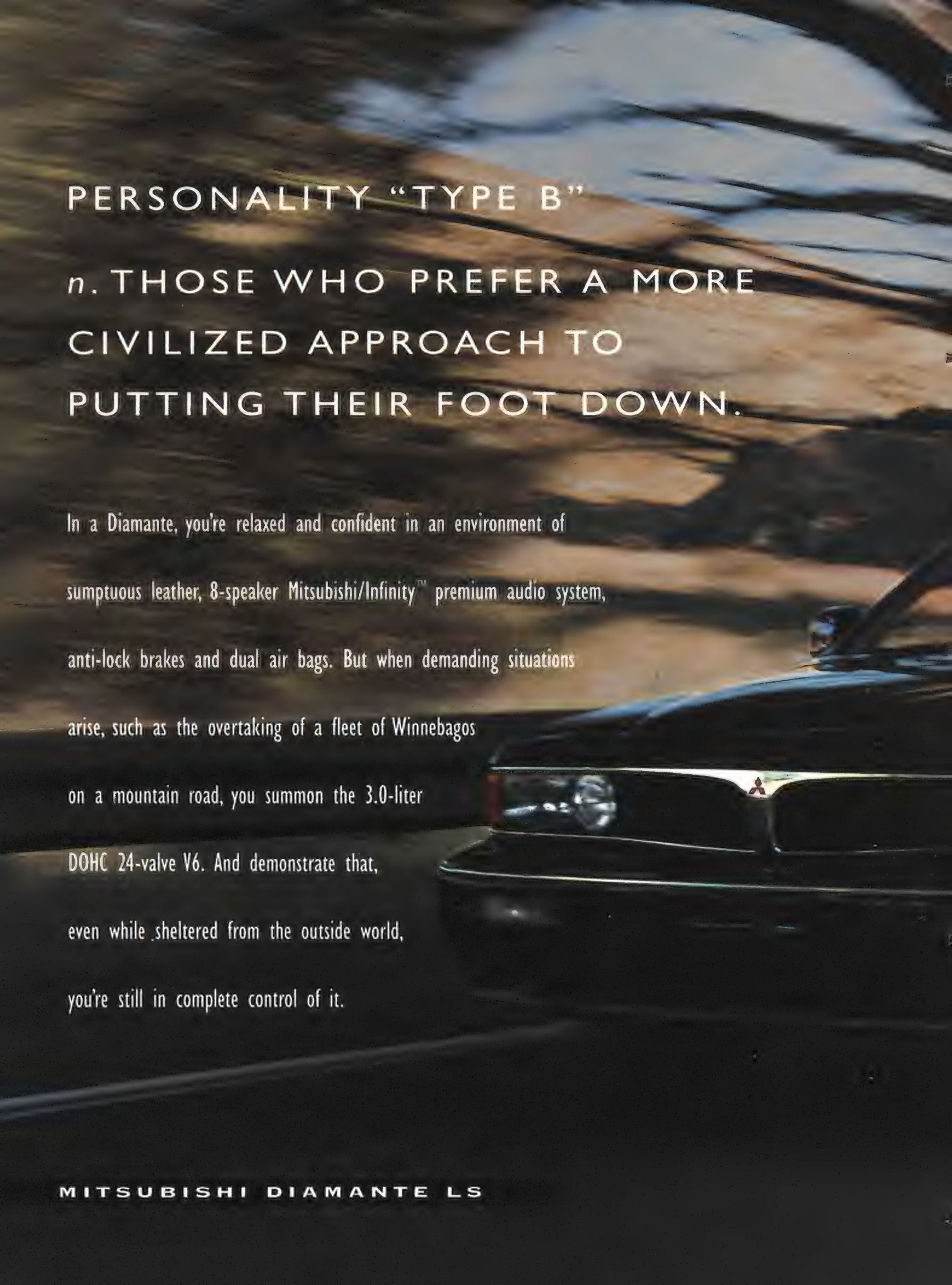

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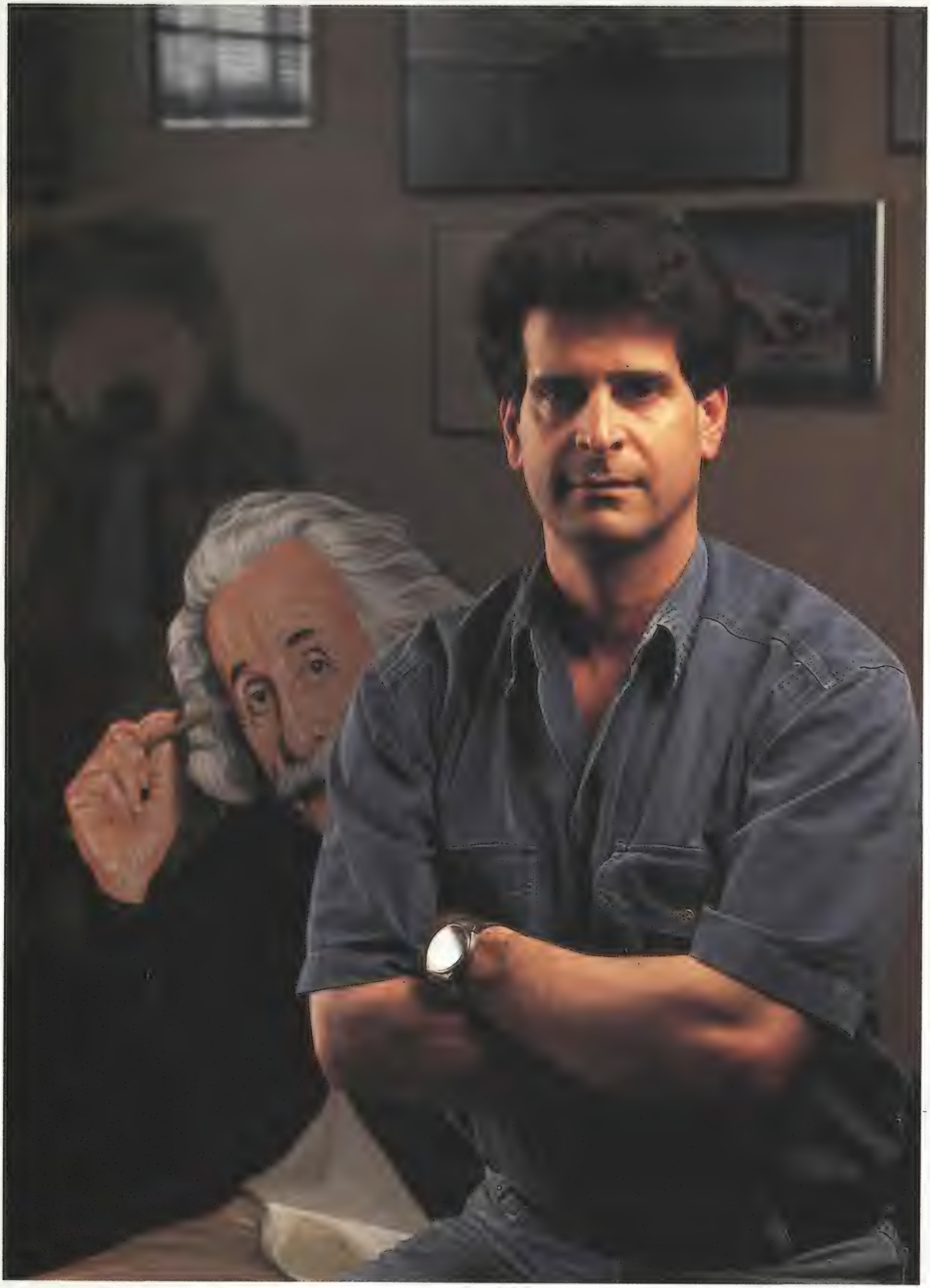

By Steve Kemper

'If you do not want to hear about what he does, *do not ask*'

That's Bill Clinton describing Dean Kamen, a human dynamo who is spreading the word to America's young people: technology is fun!

Dean Kamen, the keynote speaker at a national convention of engineers in Boston earlier this year, looked decidedly out of place as he sauntered up to the microphone. In contrast with the sea of expensive suits before him, Kamen wore jeans, a denim work shirt and square-toed leather boots. Though a millionaire several times over, he wears the identical outfit every day, in all circumstances, whether milling a machine part for a new invention, striking a deal with a fellow CEO or meeting with the President of the United States.

Just before his speech, when asked to explain his habit of dress, he said, "My question is, why do people wear clothes made from thin, delicate material, and a thing that hangs from their neck, and shoes with no soles? A tie gets caught in things, and there aren't enough pockets"—he pulled a small adjustable wrench from one of his—"and if you *do* anything, by the end of the day those delicate clothes get dirty and ruined. So I wear these clothes because I *work*. And frankly, the message sent by suits and ties—which is, 'I don't really work'—is offensive to me."

Kamen looked over the podium at 700 engineers relaxing after a big meal. "The bad news is," he began, "we're a technophobic society. The worse news is, you guys are to blame for it." He paused as eyebrows began to rise. "And by the way," he continued, "if you don't like what I say today, well, you're not paying me anything, so I don't give a damn."

No one ever describes Kamen as diplomatic. They do call him brilliant, relentless, visionary. The word "genius" also comes up a lot, and not from people prone to hyperbole. Roland Schmitt, who was in research and development at General Electric for 37 years and then served as president of Rensselaer Polytechnic Institute, says, "Dean is the best technologist I've ever encountered, and I've known some great ones. He has the ability to synthesize knowledge about so many areas—sensors, materials, mechanics, electronics."

Although Kamen prefers to think of himself as a physicist, he is also an inventor and an entrepreneur. A 43-year-old autodidact who flunked a lot of courses at Worcester Polytechnic Institute before dropping out, he holds more than 30 U. S. patents relating to medical devices, climate control systems and helicopter design. In March, *Design News* magazine gave him its prestigious "Engineer of the Year" award.

Kamen calls himself "just a boring average guy." What's really exciting, he tells anyone he can collar, is his crusade to recruit America's youth for science and technology. It began in 1986 when he opened a hands-on science museum for children in Manchester, New Hampshire, where his company, DEKA Research & Development Corporation, is based. He soon craved a higher pulpit and a bigger arena, so he started a nonprofit group called U. S. First. Its goal is to persuade kids that engineering and technology are far more exciting than slam dunks, Nintendo and MTV. And its method of persuasion is a high-tech sporting event, created by Massachusetts Institute of Technology professor Woodie Flowers, which pits gladiator robots designed by teams of high school students and corporate engineers. It appalls Kamen that students in this country consistently rank near the bottom in math and science among industrial nations.

"Tell me the name of one living scientist or engineer that a kid wants to grow up and be like," he said to the engineers in Boston. "They use video games, laser disks, Walkmans, but have no clue who invented them. As technologists we haven't been looking for recognition because we like what we do—and we don't care if the public understands it. That is irresponsible and inappropriate. We need to demonstrate to kids that technology is productive and fun, and that you can make lots of money doing it. The media have created megaheroes of rock stars and sports players. I'm asking all of you to help us make the next hero a scientist or a technologist—*real* heroes." They could help, he suggested, by convincing their companies and alma maters to sponsor teams in the annual U. S. First competition.

This national event is Kamen's main weapon in the

Inventor, entrepreneur and crusader, Kamen sits in Einstein's lap—actually, a gimmick chair in his office.

Photographs by Susan Lapides

Competing in national meet, student at left operates robot-control units while team members watch action.

battle against techno-illiteracy. It combines the action of Monday night football with the brainpower of today's bright engineers and high school students. As someone who never cared much for school, Kamen is adamant that the purpose of U.S. First is not education but inspiration. ("U.S. First" stands for "United States For Inspiration and Recognition of Science and Technology.") "I don't want it to be a festival that no one but the nerds knows about," he says. "The goal is to get it on TV so that thousands of kids can see it."

Kamen has persuaded, pressured or shamed some big companies—Procter & Gamble, Motorola, Boeing, Ford, Honeywell, Ingersoll-Rand, Xerox—into donating money and engineers to work with the young people. "If we reach even 1 percent of the students in this country," he harangues their executives, "we will have a bigger impact than all the science fairs combined." He is also planning a science center in Manchester where visitors can build their own machines, walk through the inside of a clock or play virtual-reality basketball.

The inaugural U.S. First competition, in 1992, attracted 28 teams and President George Bush, who happened to be in New Hampshire campaigning. As Bush watched the action, Kamen zeroed in. "Mr. President, you're always inviting the winners of football games and basketball games to the White House. Why not encourage young scientists by inviting the winners of this?" Bush responded with a vague "Good idea" and began walking away. Kamen pursued him, tugged on the sleeve of his suitcoat and said, "Mr. President, why not go to the podium and announce it right now?" Bush did. That summer, the winners were honored at a ceremony in the White House Rose Garden. Kamen has finagled the same invitation for the winners from President Bill Clinton, who remarked at last year's ceremony that Kamen's "energy is still the single most inexhaustible thing I think I've seen in the United States of America. If you do not want to hear about what he does, *do not ask*—or stand within a four-mile radius."

This year, on a February weekend, 43 teams from 15 states and Jamaica came to New Hampshire with their remote-controlled robots, designed within constraints of size, weight and materials. The robots chased down and collected soccer balls, and then either lifted or catapulted them into a goal five feet high.

The Nashua High School gym was packed with more than 2,000 people. Rival factions screamed and stomped in the bleachers. Cheerleaders, mascots, banners and pep bands urged on their schools' budding engineers, who sent their ingenious robots whirring around a polygonal rink 34 feet across, scooping up balls and bashing into opponents. After winning a match, elated students and their engineer-mentors exchanged high fives, then pumped clenched fists to their roaring fans.

Like Kamen, Steve Kemper did poorly in high school physics, but he has yet to earn his first million. He profiled plant breeder Ronald Parker in August.

Rival factions in New Hampshire gym cheer (above) as remote-controlled robots (left) whir around contest rink, scattering opponents' balls and chasing their own. Robot that puts most balls in goal (center) wins. Disputes are settled by referees in striped shirts.

In the cafeteria, which had been turned into a pit area, power tools whined as teams scrambled to adjust gears or repair damaged mechanisms before their next match.

Watching all this, Kamen predicted that more than 100 teams would participate next year. He envisioned regional play-offs, with the final rounds held at Walt Disney World's Epcot Center. Soon, he said, U.S. First would move to one of the domed sports stadiums, with extensive national coverage (ESPN, CNN and ABC's *20/20* have featured the competition in years past). "In ten years," Kamen added with a straight face, "it will overshadow the Super Bowl."

As the day wore on and teams were slowly eliminated, the intensity and suspense inside the gym grew. During the championship match a wild din swelled in the bleachers as a Procter & Gamble robot edged out a Texas Instruments robot by catapulting the winning ball into the goal at the buzzer. The crowd erupted from the stands and mobbed the jubilant winners.

The previous night, at the dinner for all the teams, the students chattered right through the talks by several corporate bigwigs, but when Kamen approached the microphone, they gave him a standing ovation and then fell silent. "I know a lot of you are very excited about athletics," he said, "but I think my body is nothing but a machine that carries my head around. And I know that you're having a lot of fun here this weekend. But no matter how much fun you think *this* is, it's just Little League. You think it's exciting that you've learned how to lift a ball into a little bucket. But the engineers you worked with may go back and design something that could lift something the size of your whole neighborhood and move it across the country. I hope that this whole experience has convinced you that technology is accessible, rewarding and fun, and that you'd better work at it *now*. There are only two alternatives: you'll be dumb or you'll grow up and be a lawyer."

When Kamen was growing up in Long Island, New York, he sometimes worried that he was dumb. He didn't like school, and his grades showed it. His mind kept veering off on speculative tangents. Once, in the fourth grade, his teacher explained that every number divided by itself is one. "I started thinking about that," he remembers, "and I raised my hand and said, 'Then what is zero divided by zero?' She got really angry and accused me of not paying attention. Which was usually true but not this time. She called my mother, but I said I wasn't wrong, and I wouldn't apologize because there was no logic in what she said."

In high school, still frustrated by his teachers' inability to answer questions, he began reading the original works of great scientific thinkers such as Archimedes, Galileo, Newton and Einstein who, along with Walt Disney, remain his principal heroes. Given the slightest encouragement he will re-create, with great enthusiasm and illustrative detail, such arcana as Archimedes' formula for calculating the volume of a sphere.

Kamen's gifts as an inventor and entrepreneur also

Assisted by a technician, young visitor at Kamen's science museum takes ride on the "moon walk" exhibit.

popped up during those years. The summer after his high school graduation, he took a job with a company that did audiovisual shows. The control system was big and awkward, with lots of wired relays. Kamen imagined a better way. He bought $400 worth of solid-state electronics and studied technical manuals. By the end of the summer he had designed a small control box that the delighted company bought for $2,000. During his first year at Worcester Polytechnic, he came home every Friday to build more boxes in his parents' basement. Within a year, he sold nearly $60,000 worth of them.

At college he took courses in physics and electronics and hung around his professors' offices to ask questions. He also ignored the required courses, stopped taking tests and started failing. He was still driving home every Friday to work in his parents' basement, which by now resembled an electronics shop. He got the idea for his next invention from his older brother, Bart, who was then studying medicine. Bart had noticed that nurses spent a lot of time checking IVs to make sure that patients were getting the right dosages. Bart asked his brother to invent a device that would accurately administer small amounts of drugs throughout the day. If he could make it portable, so that patients wouldn't be tied to the hospital, even better.

Kamen, then 20, responded by inventing the first portable drug-infusion pump. An article about it in the *New England Journal of Medicine* attracted interest from around the world, including an order for 100 from the National Institutes of Health. Meanwhile, Kamen had convinced his parents to let him expand the basement and move in large machine tools. The basement became a factory for Kamen's new company, Auto-Syringe. His younger brother, Mitch, and Mitch's high school friends assembled the pumps; his mother, Evelyn, tested the circuit boards. Soon, with help from a group of investors, Kamen expanded into an industrial building and assembled an engineering staff. It was 1975 and he was 24.

The lifestyle of the rich and industrious

A few years later, he invented the first portable insulin pump. Worn on a belt around the waist, the pump weighed less than a pound and dispensed precise amounts of insulin throughout the day, eliminating the wild swings of blood sugar that bedeviled diabetics. In 1979, tired of crowds and high state taxes, Kamen moved Auto-Syringe to New Hampshire. Three years later, he and his investors agreed to sell the company.

At 31, Kamen was a multimillionaire. He could afford a house, which he built on 16 acres in Bedford. He bought one for his parents, too, just through the woods from his. He put a complete machine shop just off his kitchen. It's the biggest room in the house, except for the room with the indoor pool. Kamen often spends the

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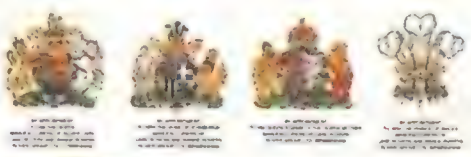

LAND ROVER DISCOVERY

Commuting to work in helicopter, Kamen lands atop the 19th-century textile mill that houses his company.

As a boy, he dreamed about flying a magic carpet; later he bought (and sold) the firm that made his copter.

wee hours in his home shop, milling, grinding and molding new ideas into reality. "I just like running those machines," he says. "It's relaxing."

As a boy he had dreamed about flying on a magic carpet. When he got older he discovered helicopters. Once he was rich, he bought one, and a plane as well. He began commuting to work by helicopter, and soon had ideas about how to improve the aircraft. So he bought the company that made it, Enstrom. (He sold his controlling interest in 1990 but still commutes to work in an Enstrom and still plays with helicopter design.)

Now that Kamen had a magic carpet, he needed an enchanted kingdom, so he bought a three-acre island named North Dumpling off the coast of Connecticut. In his office, a picture of the island bears the caption, "The only 100 percent science-literate society . . . America could learn a lot from its neighbor." As "Lord Dumpling," he has decreed a territorial limit of 200 inches. The island has a constitution, a postal service (with stamps featuring turtles and snails) and even a national anthem sung to the tune of "America the Beautiful": "North Dumpling, North Dumpling, / Keep lawyers far from thee. / And MBA's and bureaucrats, / That we may all be free. . . ."

Kamen's main purchase, however, was a row of 19th-century textile mills along the Merrimack River in Manchester. That's where he started his new research-and-development company, called DEKA after the first two letters of his names. While renovating the old mills, he determined that the industrial heating-and-cooling systems then on the market were deplorable. He invented a new one that controls everything with personal computers. That led to a second company, Teletrol, which has installed systems for AT&T, the Texas State Capitol in Austin, NASA's Mission Control in Houston and the 38 buildings of McMaster University in Canada.

A bachelor, Kamen often grumbles that his main project in life is to find a mate, but those close to him say he's a workaholic irrevocably married to DEKA. The company has grown in the past decade from 15 employees to 80, most of them engineers or toolmakers. He hires only the very brightest. Few applicants survive the first interview, which requires the candidate to stand for hours before Kamen and some of his staff answering questions about the principles of physics and engineering. Taking their cue from Kamen, almost everyone at DEKA wears jeans, even in meetings with big corporate clients. There is no bureaucracy; everyone reports directly to the boss.

Like an old-time factory owner, Kamen wants to stay

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Kamen, a bachelor, relaxes in his machine shop at home, making new bolts for one of his many old engines.

close to the "floor"—his office is across the hall from the machine shop so he can constantly check on projects and be handy for questions. The walls of his office are filled with pictures of helicopters. Machine parts litter the coffee table. An eight-foot slide rule dominates one wall; a huge teddy bear claims one corner of the room. There are two pictures of Einstein, plus a large wooden chair painted to look like Einstein sitting down; Kamen sometimes perches in the great physicist's lap.

DEKA's halls are lined with photographs of infusion pumps, helicopters and the tall gear-and-pendulum clocks that Kamen machines and assembles as a hobby. "They're a nice combination of physics, electronics, mechanical engineering and machining," he says. There are also outsize comics, the original artwork done by Dean's father, Jack, for pulp magazines such as *Creepshow, Weird Science* and *Shock*. Jack Kamen was also one of the first artists hired at *Mad* magazine and still does all of DEKA's illustrations; Evelyn Kamen, Dean's mother, is an accountant and keeps the books. Kamen claims never to have looked at his father's work while growing up, nor has he ever been interested in science fiction: "The real stuff is too good." His idea of a good read is a physics textbook.

In fact, most popular culture seems to have escaped Kamen's attention. He can rattle off Nobel Prize winners in physics but draws a blank at the name "Robert De Niro." At a dinner not long ago he was seated next to Shirley MacLaine and Warren Beatty; he had no idea who they were.

Recently Kamen and his associates reinvented the kidney dialysis machine. The old one was noisy, gravity-driven and bulky (5½ feet high, 180 pounds). The new one uses computer-controlled pneumatics. It's quiet enough to use during sleep, easy to operate, weighs 22 pounds and fits under an airline seat. Now dialysis patients can undergo treatment away from the hospital.

Kamen generates so many ideas that his 80 employees can barely keep up with him. Mike Ambrogi doesn't have a real title at DEKA but calls himself the "engineering manager, the one person here who worries." A mechanical engineer who graduated first in his class from MIT in 1985, Ambrogi has stationed his office between Kamen's and the engineers' in an effort to shield them from Kamen's fusillades of rapid-fire suggestions. "When he's brainstorming," says Doug Vincent, another outstanding engineer recruited from MIT, "you just hold on and try to stay with him. I've never seen anything like it. But it's frustrating, too, because you can be working on something for months, and Dean comes in with a thousand new ideas and just blows you away." The trick, says Ambrogi, "is knowing when to take his suggestions and when to say, 'Dean, that's still a few generations away. We really have to do *this* now.'"

The DEKA staff is fiercely devoted to Kamen. His generosity accounts for part of it. He has taken everyone, including spouses and children, on trips to Disneyland and Disney World. "He's loaned money to half the people in here," says Ambrogi.

Kamen gives the staff a lot of freedom, but if he doesn't get results, woe unto the wretch heaped with his scorn. "He lets everybody learn by doing and making big mistakes that cost him a lot of money," says Vincent, "but then you have to live with that and hear about it."

He's onto something big—but what?

For some time now, a team of DEKA engineers has been working on a secret project in which Kamen has invested millions. He says it makes everything else he's done look like child's play, and it will change the way millions of people live. He won't say much about it, except that it uses some of the principles from the Stirling cycle, the operating basis of a hot-air engine invented in 1816 and nearly forgotten today. Most of the engineers working on the project had never heard of the Stirling cycle. Kamen not only knew about it, he has restored a number of old Stirling engines to working condition.

Kamen's home is filled with beautifully restored old machines, splendid in their muscular, functional sculpture. All of them work. One side of a sunny atrium holds the diesel engine that powered Henry Ford's yacht around Lake Michigan. There's something Kamen calls "a one-lung fire-breather," an early engine that predates the spark plug, an old drill press, a Civil War-vintage scroll saw and three Stirlings. He oils up a steam engine, points out its fly-ball governor and cranks it up. *Chunk-*

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a-chunk-a, chunk-a-chunk-a. "She's talking to you," Kamen says.

Old machines give him great pleasure. "They're elegant, and they were made by artists," he explains. "Look at the spokes on this scroll saw—they're tapered, they're sensual. Old machines are simple and clear in their use of cause and effect. I like the physics they represent, the craftsmanship, the sensuality. I like the *sounds* they make. And they are moving, breathing pieces of history."

Rebuilding old machines and reading old scientific texts often leads Kamen to new inventions. "A lot of my approaches to new problems come from studying how the Greeks or Newton solved problems in their day. Our new dialysis machine uses Boyle's Law and Gay-Lussac's Law—discoveries from the 17th and 18th centuries that explain the properties of gases."

His latest find is a late 19th-century reconstruction of an internal-combustion engine that he traces back to a Yankee inventor named Samuel Morey (1762-1843). Most people credit the first commercially successful internal-combustion engine to Nikolaus Otto in 1876. But Kamen has investigated this engine's history and can hold forth on its drama: how Morey had to invent a carburetion system that vaporized turpentine because gasoline was still unknown; how Morey's patents for the engine were lost or ignored in the early years of the Republic before the Patent Office got fully organized; how his technology was passed on and ended up in the rusty hulk that Kamen bought at auction. He has been rebuilding it for a couple of years. "I think we'll soon demonstrate that this engine works and that this guy invented it 50 years before Otto," he says. "Now *that's* what you should be writing about. *That's* interesting."

He intends to build a new house around another giant engine. "It's huge," he says. "The flywheel alone weighs 15,000 pounds and is 20 feet high. I want to put this thing in the middle of my next house, with the pistons going." He stands there pumping his arms up and down like pistons, looking very happy to be an engine generating energy.

The lighthouse on Dumpling, Kamen's private island, overlooks Long Island Sound and coast of Connecticut. As "Lord Dumpling," Kamen holds sway over what he calls "the only 100 percent science-literate society."

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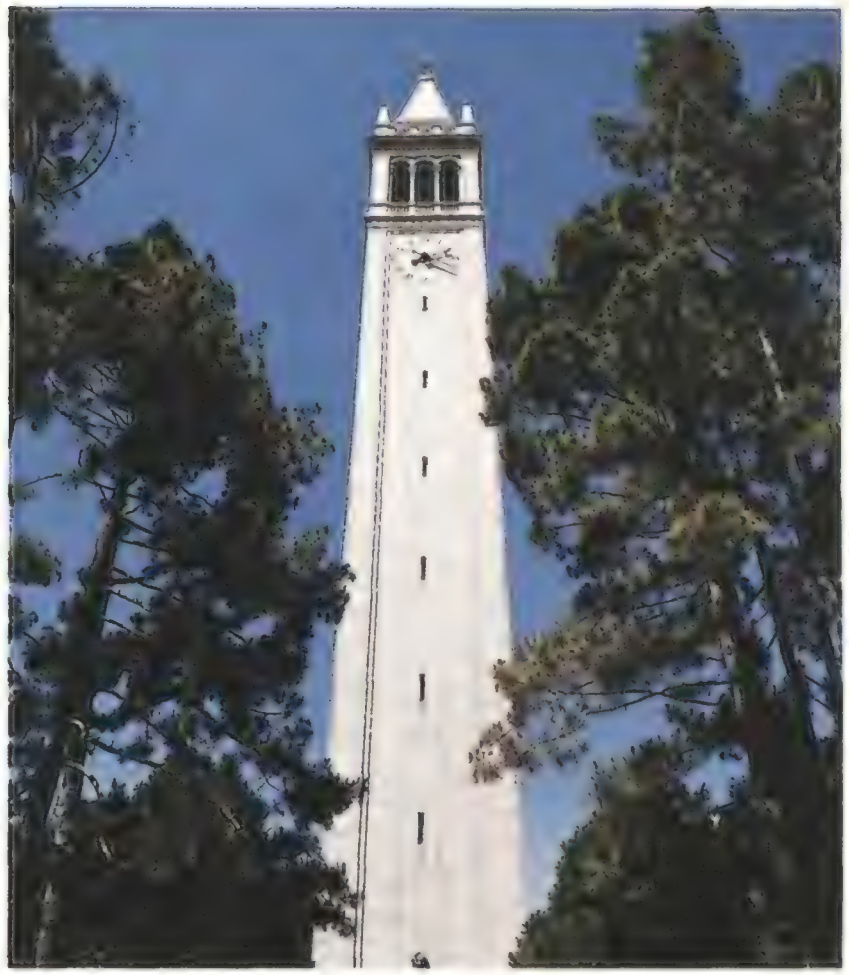
By Chiori Santiago

Carillons: making heavy-metal music with staying power

Once a town's news network, early-warning system and entertainment all in one, the 'bells without fear' still stop us in our tracks



Carillonneurs Lori Lamma and Ron Barnes (opposite) love the 61 bells in U.C., Berkeley campanile (above).

At the top of a tower at the University of California at Berkeley, someone is howling. Ripples of silvery notes seep from a music room high in the campanile, punctuated now and then by a loud yelp. It ends, the door opens and a small, curly-haired, grinning person named Lori Lamma emerges. "Sorry," she says. "I get kind of vocal when I make a mistake."

Lamma is the guest artist for today's concert of the "original heavy-metal music," as she calls it, played on the 61 giant bells that hang at the top of the campanile—King Kong cousins of the innocuous little bells associated with Christmas and the Salvation Army. It's an assignment that chains her to the practice room for last-minute battle with a Handel concerto. "When you're playing an instrument of that size, you don't want to hit a wrong note," she says. "It'll offend people for miles around."

Moments later, Lamma is in her perch, and the first booming chords float over the campus. Students scurry as the bells urge them to class, or stop, faces turned to the sky, held by this singular civic device that "presents to the poor man the privilege of enjoying the rich man's concert," as bell authority Percival Price once mused.

Whether it sings of a wedding or tolls for a life's passing, or simply tells us it's time to catch the 5:30 train for the 'burbs, the voice of a bell makes most of us pause. Let a group of bells ring out Mozart or Bach or even the Beatles' greatest hits for an hour or more, and the listener will experience the music that sent writer Hilaire Belloc into rapture: the sound of "self-answering, multitudinous bells, bells without fear, bells excessive and bells innumerable; bells worthy of the ecstasies that are best thrown out and published in the clashing of bells."

Those "bells without fear" are the carillon, the largest musical instrument in the world and the only one played exclusively outdoors, in a gloriously public arena. More than 150 carillons are sprinkled across the United States on college campuses, in church steeples and, in a few enviable cases, on parkland free of city noise.

Unlike bells that swing back and forth, producing sound when they hit the clapper inside them (like old schoolhouse bells), a carillon bell is stationary; it rings when a clapper strikes *it*. Most people assume that the bells are motor-driven. That's only partly true. The bells that chime the hour often are driven by a giant drum, a gargantuan version of the mechanism that operates an ordinary music box. But carillons are one of the few inventions that began as mechanical wonders and evolved into manual instruments, and any carillon worth its metal is played, at least occasionally, by a bonafide carillonneur who sits alone in the belfry, pounding and pumping an array of wooden batons (p. 122) to extract melody from bells so huge and loud that often their effect can't be properly heard by the musician. It is a lonely profession but a lofty one. While the music affects a multitude, carillonneurs themselves remain invisible, so that their chords and trills and arpeggios, floating mysteriously in the atmosphere, suggest the presence of magic.

The medieval artisans who launched the evolution of

Two bell players, each with a pair of hammers, play above King David in a 12th-century English psalter.

the carillon were, in fact, viewed as magicians. Bell founders and clockmakers were the technological wizards of the Middle Ages, charged with maintaining the complex machinery that allowed Europe's citizenry to organize their lives and communicate with one another. The town clock and its bells were more than a timepiece; they were news network, emergency response system and public entertainment rolled into one. A couple of thousand years passed before the paths of bell and clock intersected, but when they did, they produced a concert instrument that can't be ignored.

Bells have an ancient ancestry, predating written history. Bronze bells dating from the Shang dynasty (circa 1700 to 1050 B.C.) have been unearthed in China, and pre-Columbian societies in Bolivia fashioned chimes of stone slabs. From earliest times, bells in all cultures were associated with mysticism. "The sound of bells has to do with a heavenly sound," notes bell expert André Lehr, a retired campanologist and director of the National Carillon Museum in the Netherlands. Lehr also is the author of a detailed history, *The Art of the Carillon in the Low Countries.* As he speaks, a clock in his office at the Carillon Museum interrupts every 15 minutes with a tinkling chorus, reminding him of the subject that governs most of his waking moments.

"You read in the Christian Bible that God is always coming to the people with thunder and much sound," Lehr continues. "And that's the reason people ring the bells, to come in contact with this God." Legends about the metaphysical powers of bells abound. It's said that in A.D. 615 the sound of a church bell frightened the Frankish armies from their siege outside Paris. In the Middle Ages, Catholic church bells were dressed in lace collars and solemnly consecrated; once hung, they were rung to ward away evil spirits. Often, for tax collection purposes, a town's boundaries were defined by the reach of its bells' voices. Bells were moral guardians: one story goes that in the eighth century, Charlemagne commissioned a bell from a founder who insisted that a measure of silver in the bell metal would sweeten the sound. The founder kept the silver for himself, fashioning the bell of ordinary bronze. When hung, it refused to ring. When the greedy founder tugged impatiently at the bell rope, the clapper fell, executing him.

The lore of the bells survives even in modern times. London's famous "Big Ben" is not the clock tower but the bell that hangs inside; in East London, the bells of the Church of St. Mary-le-Bow christen all born within the range of their sound a true Cockney. A ringing bell announces the conferring of wings upon an angel, according to no less an authority than Jimmy Stewart's guardian angel, Clarence, in the film *It's a Wonderful Life.* And in Dorothy Sayers' 1934 mystery classic *The Nine Tailors*, bells exact a chilling retribution.

"You hear history in a bell," Lehr says. Once, bells ruled daily life throughout Europe. A morning bell called townsfolk to early mass; rung in the evening, it signaled the closing of the city gates or announced curfew, when households were required to *couvre feu* (cover the fire) and go to bed. Bells warned of a fire in the town or rang a call to arms; when a citizen died, the tone of the bell signified the gender and age of the departed. With their ability to broadcast news far and wide, bells were a media network in those pre-CNN days. They were most often found in the church, which served as community center as well as place of worship. In Belgium and Holland, the bell's municipal function was so important

Freelancer Chiori Santiago, who lives in California, wrote about the tango in the November 1993 issue.

that, though the church belonged to the parish, the bell itself was town property—a custom that continues today.

When the weight-driven tower clock was refined around 1360, it was, naturally, paired with the town bell to sound the hour. During the next hundred years, the clock and bell became indelibly linked. Our word "clock" actually comes from the Dutch word for bell, *klok*; and when English carillonneurs ply their art, they call what they're doing "clocking the bell."

It wasn't long before the marvelous invention became commonplace. People forgot to listen for the hour strike and so didn't know when to start counting the chimes and thus figure the time. By 1479, the Park Abbey tower near Louvain, Belgium, provided a *voorslag*, or warning melody, to tell listeners the hour was about to be rung. The chosen theme, "*Inviolata integra et castra es Maria*," probably was struck on a mere four bells by an automatic drum system, but these first "singing bells" represented a turning point in carillon history. The recognizable tune that the bells played, the "quatrillon," lent its name to what would be the carillon.

Basically unchanged for five centuries

When someone thought of attaching bell ropes to a keyboard so the bells could be operated manually, the carillon was born. No one knows who came up with the idea, but it certainly had happened by 1510, when a carillon keyboard was mentioned in the records of a Dutch town. The evolution from mechanism to musical instrument was complete, and though the carillon has undergone many refinements, its basic structure has remained unchanged for five centuries.

The Belfry of Ghent in Belgium is a monument to longevity. Its stone face is soot-blackened, and on a cold spring morning the unadorned flagpoles at its crown seem to shiver like naked arms, but it stands as straight and proud as the day it was completed nearly 700 years ago. Its 52-bell carillon was the largest in the world until 1925, when John D. Rockefeller decided that the carillon he planned for the Park Avenue Baptist Church in New York City should be second to none, and ordered a casting of 53 bells. (It is now at the Riverside Church.)

Every Friday and Sunday, city carillonneur Jos D'hollander appears at the belfry to play an hourlong concert, a ritual that has been repeated since 1553, when Ghent first hired someone to play "for the honor and decoration of the town." He steps through an iron gate to an entryway inauspiciously decorated with bags of decaying garbage, unlocks a wooden door in the belfry's flank, climbs a hundred cold, stone steps, rides an old elevator, and finally arrives at the top: a cozy cubicle with room for only the keyboard, the carillonneur and a guest. Shrugging off his blue blazer, he shuffles through his sheet music and begins to whistle.

In old print, 17th-century Hemony brothers tune bells as Utrecht carillonneur Jacob van Eijck lends an ear.

At precisely 11:30, D'hollander is ready. Poised over the keyboard's wooden batons—they resemble a row of tiny, polished baseball bats—he presses them rapidly with his fists to sound the first notes of "Jesu, Joy of Man's Desiring." Each baton manipulates a wire attached to a bell's clapper; adjustment knobs on the wires bob up and down with each blow, as if they're bowing and curtseying to the rhythm. With his feet he presses wooden pedals to sound bells in the lower register. His whole body is involved; playing the instrument is, as one carillonneur has put it, "like dancing to your own music."

D'hollander's silver beard nods as he follows the score, peering through wire-rimmed spectacles in a professorial way. The bells respond with a clamor of voices spilling like a frosty stream through the tower's windows. Longfellow comes to mind, with his description of the belfry in nearby Bruges: "With their strange, un-

Joost Eijsbouts, the fourth generation to lead his family's bell foundry, stands in the tuning room.

earthly changes rang the melancholy chimes / Like the psalms from some old cloister, when the nuns sing in the choir / And the great bell tolled among them, like the chanting of a friar."

"Bells are for me a choir," D'hollander confirms as the last notes vibrate in the air. "So I play them as if directing a choir." He presses one pedal thoughtfully; in the chamber far beneath our feet, the sound of the *bourdon*, or deepest bell, yawns in response. "The dynamic possibilities are so rich on this carillon," he says. D'hollander has reason to be proud. Ghent's bells were cast in 1659-60 by the "Stradivarius of bell founders," Pieter Hemony. Pieter and his brother François, the most prolific bell founders of the 17th-century Low Countries, were the first to perfect a method for tuning the bells accurately.

But in the case of Ghent's carillon, the fickle nature of bells nearly cost Pieter Hemony his reputation. Because bells are tuned to a chromatic scale that echoes the minor key overtones of the instrument, they have the "strange, unearthly, melancholy" voice of Longfellow's poem. It's a matter of opinion whether that sound is enchanting or discordant. When Hemony's bells were first sounded in this belfry on New Year's Eve in 1660, local musicians and magistrates began bickering over whether Hemony had fulfilled his contract for a "good, pure and harmonious" carillon. City magistrates admitted that "anger and jealousy" among the musicians could be responsible for the fracas; Pieter finally threw up his hands, denouncing the lot as "shameless" and "fraudulent," whereupon a new argument began as to the selection of music that ought to be played on the bells.

The arguments finally resolved themselves, for D'hollander now commends his instrument for its "crystal sound on the high notes and warm tone on the low notes." And he has no problem playing a diverse repertoire that follows Bach with Gershwin's "Summertime," shifts to a romantic air by Belgium's most famous carillon artist, Jef Denyn, then segues into the cloying sentiment of the theme from *The Godfather*. At the end of each phrase, he pummels the batons in a tremolo flourish, a technique developed by Jef Denyn to make a bad carillon sound better and that survives in the hands of Belgian carillonneurs no matter what the quality of their bells. If the ghost of Pieter Hemony can hear, he may be wincing at the irony.

Joost Eijsbouts (left) is on familiar terms with the Hemonys' ghosts. As he steps through a field of polished bells, their mouths upturned, tuliplike, awaiting shipment at his family's century-old business, the Royal Eijsbouts Foundry in Asten, he explains that the company has undertaken several restorations of Hemony carillons throughout the Low Countries. Recently, the foundry was commissioned to cast ten new bells for Amsterdam's Zuider Kerk (South Church) carillon, installed by the Hemonys in 1656. To cast them, Eijsbouts copied

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I'll always remember that face.
The smile bordering on a tear.
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Tasks at Eijsbouts foundry include making a bell-mold's inner core from cement (above), tuning a cast bell (above, right) and computer-aided design (at right).

the shape and materials used by the Hemonys, then invited top carillonneurs to judge them in a blindfold test. The experts couldn't distinguish between the tone of the originals and the Eijsbouts imitations.

Dedication to unraveling the historic mysteries of carillon making has put the Eijsbouts foundry at the top of its field. Not that there's a surfeit of competition. Some 40 bell founders ply their trade in Europe, but most make only single swinging bells for clock towers. Only four companies manufacture sets of tuned bells for carillons: there's Petit and Fritsen, in addition to Eijsbouts, in Holland, Paccard in France and Taylor in England. Eijsbouts carillons ring in 40 towers throughout the United States, from Abilene to Tuscaloosa, and in dozens of town squares, abbeys and even shopping malls in Europe and Asia.

The Eijsbouts venture began in 1872 when ambitious young Bonaventura Eijsbouts decided to build tower clocks. His son Johan joined the business in 1893, expanding the product line by importing swinging bells to go with the clocks. Johan's son Tuur, fascinated by the challenges of the carillon as an instrument, installed the first in-house bell-casting facilities in 1947. The lure of the bell would push the clock enterprise to second place as Tuur's brother Max strove to sell the Eijsbouts chimes worldwide. With André Lehr as campanologist, the foundry pushed its medieval art into the 20th century by introducing the use of computers to design bells, and by developing the first set of bells to ring in "major third" tuning—tones perceived as more cheerily piano-like than the traditional melancholy of the ancient peal. A few years ago, Max's sons, Max jr. and Joost, became the family's fourth generation dedicated to the carillon.

Some facets of bell making can't be modernized, including the actual casting process. In the cavernous Eijsbouts foundry, workers go about their sweaty business much as the Hemonys did. A bell's gestation begins with the shaping of the mold. In a corner of the foundry, a worker turns a large potter's-type wheel piled with fire-resistant cement (an improvement over horse manure,

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Belfry of the city tower in Ghent, Belgium (above), houses a 54-bell carillon; the bells, which hang stationary, are sounded when hit by clappers (below).

which medieval founders used). A metal template scrapes the mound's surface, gradually defining the bell's inner curves, or core. Then a layer of wet sand is placed over the concrete core, followed by a layer of wax. The sand and wax together form the "false bell," a preview in wax of how the final bell will look. The wax surface is then embellished with designs, also made of wax; they will stand out in high relief on the finished bell. Both the core and false bell are embedded in a cement-lined steel cope (which looks like the concentric layers of a huge metal wedding cake), left to harden for a week or so, then separated. The false bell falls away, leaving an impression of the outer bell in the cement of the cope. Cope and core are reunited, and foundry workers fill the interstice with molten bronze.

Throwing coins into the boiling brew

Bareheaded, clad in overalls, two men silently escort a bucket of red-hot metal, borne by an overhead crane, from the oil-fired furnace. If the bell is being cast for a church, a few parish officials may hover nearby, clutching coins to throw into the boiling brew for good luck. The seconds before the bucket tilts to send a glowing cascade into the mold are known as the "holy moment," for even professionals accept that divine will, as much as physics, may decide whether the cast will be successful. "We can have problems with steam getting into the mold, or air pockets or impurities that could ruin the bell," says Joost. "We won't know for 48 hours, when the bell cools. That's the difficult moment."

Priests no longer are called in to bless the casting, but foundry workers may mutter a prayer as they start the bronze flowing. One worker scrapes the surface of the stream with a long-handled ladle, pushing floating bits of foreign matter away from the pour; smoke rises from the surface of the mold, while dots of hot bronze splash onto the workers' thick leather boots and roll away in tiny, devilish spheres. Two days later the mold, its new bell locked within, will still be warm to the touch.

Selling that bell—making the medieval craft cost-effective in modern times—is an even more trying task. "The product we are selling at home is part of a centuries-old culture, and the farther we come away from our home markets, the less of the culture we find," Joost says. "The more emphasis we must put on selling a concept first and then the carillon. The result is that we have sold a combination of custom-made clocks with carillons, or automatically played carillons that communicate to people, 'Come into our shopping center.'"

All of which makes a dedicated carillonneur shudder; some professional associations have disapproved of the Eijsbouts foundry's outlandish attempts to broaden the market by, for example, introducing the major third bells, which carillon traditionalists consider an affront

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COLORADO

In the Belfry high above Ghent, city carillonneur Jos D'hollander strikes wooden batons with his closed hands. Twice a week he climbs one hundred steps up a spiral stairway to perform both old and new music.

to their legacy. Joost shrugs in frustration. "They should encourage us," he says. "The only reason we can give our attention to old culture is because we are generating business in other countries where the projects are less historical, but less difficult. I wouldn't say carillon is a dying art, but it is endangered. City carillonneurs have a very important job, not only to play recitals but to see that carillon culture is preserved."

Traditionalists seem to forget that, even centuries ago, carillons were used to entertain visitors to the original shopping malls—the weekly town market. Carillonneurs learned to play with earsplitting force in order to be heard over the bustle of hawkers and housewives. In the Netherlands, shoppers at Amsterdam's floating flower market or Eindhoven's downtown strip continue to shout above renditions of "St. Matthew's Passion" or the Beatles' "Penny Lane" rolling from the top of a nearby church. Only in the United States did the carillon develop as a concert instrument, intended for recitals played before gloved-and-hatted spectators who sat listening demurely with printed programs in hand.

"When you hear Europeans play, it's like bowling balls on a tin roof," Ron Barnes jokes. "They beat the bejeezus out of the thing." Barnes, chief carillonneur at the University of California at Berkeley, is a former president of the Guild of Carillonneurs in North America and a defender of an American carillon tradition that's very different from its European cousin. The first modern carillon arrived stateside as recently as 1922, in an era of popularity that had begun when a Civil Service commissioner named William Gorham Rice became bored during his summer vacation.

Rice's wife, Harriet, was an American of Dutch descent with a passion for the Low Countries, which she insisted on touring often. One summer, tired of making the rounds of the Netherlands' museums and galleries, Rice cast about for a hobby to occupy his time. His wife suggested he research the region's carillons, and before long he was consumed by the subject. His first book, *Carillons of Belgium and Holland: Tower Music in the Low Countries*, was published in 1914. It touched off a trend. Not only was Rice responsible for popularizing the carillon in America; at his urging, President Herbert Hoover and John D. Rockefeller joined Rice in supporting the world's first carillon school in Mechelen, Belgium, under Jef Denyn's directorship. Denyn and Rice championed the carillon as more than a giant alarm clock; it was a concert instrument, they said, that could be played with depth and feeling.

Ron Barnes shakes his head as he speaks of that heady

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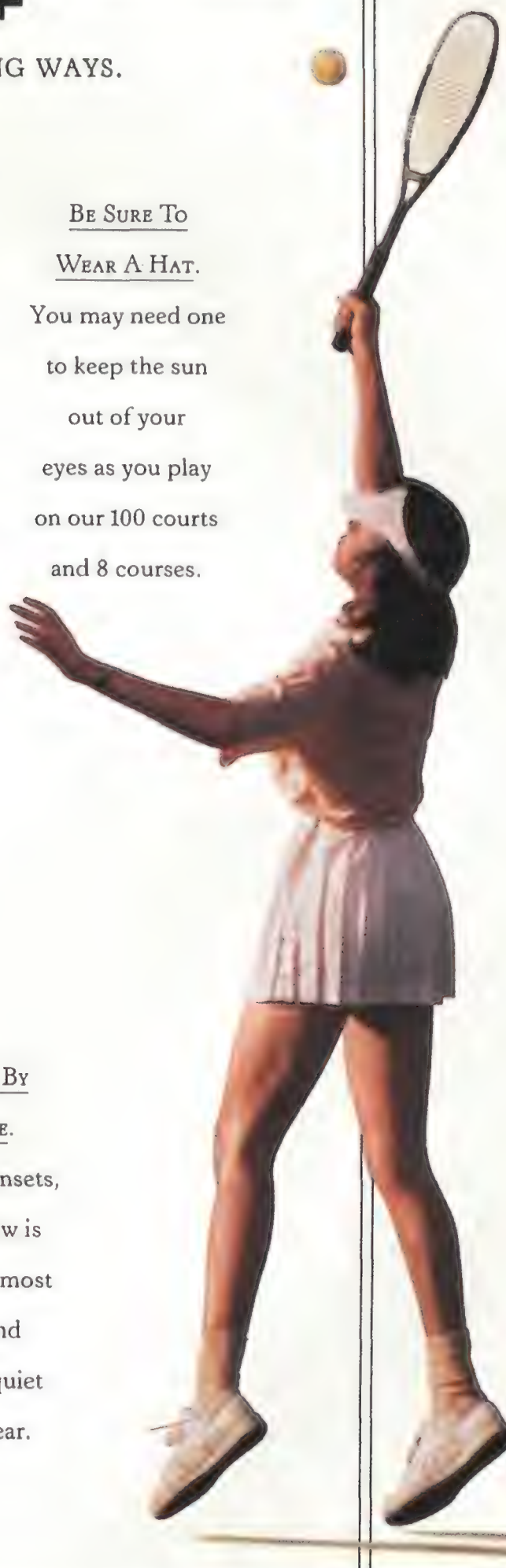

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Where can you hear a carillon?

There are more than 150 carillons around the country; some have a full-time carillonneur and a schedule of recitals, while others are played only on special occasions. Here are some of the better-known carillons:

WEST

Class of 1928 Carillon, University of California, Berkeley, California. Phone: 510-642-2678. Installed 1979; 61 bells. Carillonneur: Ronald Barnes. Sunday recitals at 2 P.M.

Crystal Cathedral, Garden Grove, California. Phone: 714-971-4000. Installed 1990; 52 bells. One of only two carillons in this country of major third bells. Carillonneur: James Lawson. Sunday recitals at noon.

MIDWEST

Thomas Rees Memorial Carillon, Washington Park, Springfield, Illinois. Phone: 217-753-6219. Installed 1962; 66 bells. Carillonneur: Karel Keldermans. Sunday recitals at 3 P.M.; summer festival.

Charles Baird Carillon, University of Michigan, Ann Arbor, Michigan. Phone: 313-764-2539. Installed 1936; 55 bells. Carillonneur: Margo Halsted. Recitals weekdays at noon, Saturdays at 10:15 A.M.; summer series.

Deeds Carillon, Carillon Historical Park, Dayton, Ohio. Phone: 513-293-2841. Installed 1988; 57 bells. Carillonneur: Larry Weinstein. Sunday recitals at 3 P.M., spring through fall.

SOUTH

Bok Singing Tower, Bok Tower Gardens, Lake Wales, Florida. Phone: 813-676-1408. Installed 1928; 57 bells. Carillonneur: Milford Myhre. Daily recitals at 3 P.M.; moonlight concerts.

Leonidas Polk Memorial Carillon, University of the South, Sewanee, Tennessee. Phone: 615-598-1539. Installed 1958; 56 bells. Carillonneurs: Marcia de Bary, Laura Hewitt Whipple. Sunday recitals at 3 P.M. during academic year and on special occasions.

EAST

The Cohasset Carillon, St. Stephen's Episcopal Church, Cohasset, Massachusetts. Phone: 508-475-2599. Installed 1924; 57 bells. Carillonneur: Sally Slade Warner. Played Sundays at 9:40 A.M.; oldest summer recital series in North America.

Washington Memorial National Carillon, Washington Memorial Chapel, Valley Forge Park, Valley Forge, Pennsylvania. Phone: 610-783-0120. Installed 1926; 58 bells. Carillonneur: Frank Della-Penna. Sunday morning recitals; summer guest series.

Kibbey Carillon, Washington National Cathedral, Washington, D.C. Phone: 202-537-6200. Installed 1963; 53 bells. Carillonneur: Edward M. Nassor. Saturday recitals at 12:30 P.M.

Laura Spelman Rockefeller Memorial Carillon, Riverside Church, New York City. Phone: 212-870-6763 or -6764. Installed 1925; 74 bells. Carillonneur: Joseph Davis. World's largest carillon by weight. Sunday recitals at 3 P.M.

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For a list of all carillons in North America, consult the *Guild of Carillonneurs' Directory* (see *Additional Reading*, page 181).

period. Young musicians are fascinated by the big bells, he says, but most Americans nowadays haven't a clue as to what a carillon requires. "It's a flourishing art, but people will pay thousands to install a carillon someplace, and then they don't leave any provisions for someone to play it or maintain it." Barnes has one of the few ideal situations for a carillonneur—the university's instrument, the gift of a graduating class, is endowed in perpetuity. But his job is a rarity. Most carillonneurs must work in other professions to make a living. "There are only five full-time carillonneurs in this country," Barnes says, grinning wryly. "Consequently, there are carillon vultures circling this tower constantly, waiting for me to drop dead."

Todd Fair chuckles as he recalls Ron Barnes' acerbic wit. "I have a letter from Ron about the Bok Tower in Lake Wales, Florida. It's one of the most beautiful places in the world to listen to carillon, because it's a nature sanctuary; there's absolutely no distraction. But it does not get enough visitors. There's a lot of competition from Disney World, an hour away. Ron's letter said: 'Will we soon be required to have the garden attendants wear cute animal outfits as they pass out programs?'"

An American who was first charmed by the carillon in Valley Forge, Pennsylvania, Fair trained at the carillon school in Amersfoort, the Netherlands, and has been city carillonneur in Amsterdam for 15 years. He won the job in a blind-juried competition, surprising everyone by becoming the first non-Dutch civic carillonneur in Holland's history and a bridge between Old and New World perspectives. He, too, dislikes the thought of the carillon as a popular novelty: "For too long the carillon has been considered folkloric, but if it's treated seriously it can be a serious instrument." This year he performed a new work by Peter Schat, "Alarm," played simultaneously by three of Amsterdam's carillons as a protest against the rise of neo-fascism in Europe.

"I hope that kind of composing has a domino effect," he says. It may. But the lure for young students inevitably is the instrument itself. They come from all over the world to the school in Amersfoort, where Fair now teaches, seduced by the incomparable majesty of an instrument that can sound like thunder, like surf or like 300 panes of shattering glass. They take the sound of the carillon home and perhaps convince someone to place the Dutch bells in the middle of Seoul or Mexico City or Kalamazoo. They will bend over the batons, as Fair does now, to play music as free as air, music bigger than boom boxes and rattling trams and taxi horns, music that blesses all within earshot with a little bit of heaven.

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Welcome to
Indiana University

Exultant vets, 1947 (opposite). Turtle Creek grads of 1944 who went far on G.I. Bill (from left): engineer James Welshons, physicist Joe Valentich, stockbroker Andrew Tarantini, social worker Frank McIntyre, school principal Leslie Faulk, advertising executive Wyatt Young, lab technician Joe Buttyan, engineer Donald Albensi.

By Edwin Kiester jr.

The G.I. Bill may be the best deal ever made by Uncle Sam

Also known as Public Law 346, it did a lot, including help millions of veterans to an education they would otherwise have missed

On that humid evening in May 1944, a reminiscent Les Faulk was saying nearly five decades later, he could see his future unrolling ahead of him, like frames of a wartime Movietone News. As he crossed the high school stage, clutching his brand-new diploma and switching the tassel on his mortarboard from right to left to signify his new graduate status, he figured that within weeks he would board a train for an Army camp and eventually wind up in the climactic battles of World War II.

If he were lucky—and Les had always been lucky—he would get to come home safely to the smoky western Pennsylvania industrial town where the grim days of the Great Depression were still vivid. Then he would look for work. If he were very lucky, he would move up from his high school occupations of caddying at the local golf course and racking balls in Kindler's poolroom. Maybe he'd even find what the town considered a "good job." That meant he might be stoking a steel-mill open-hearth furnace or winding copper armatures in the Westinghouse generator plant.

College? Not for a young man from an Italian-speaking immigrant household—the name on Les' diploma read "Falcocchio." Not in a factory town where half the males saw so little future in the classroom that they dropped out of school at 16. Not in Turtle Creek, Pennsylvania, where before the war fewer than 5 percent of graduates went on to post-high school education, even a secretarial course or barber training. "College," Les re-

membered decades later, "that was for the teachers' kids or preachers' kids. For the rest of us, with names like Tarantini and Trkula, it was a distant dream."

So how had this white-haired 68-year-old, who still moved with the easy grace of a basketball point guard, managed to collect bachelor's and master's degrees and several credits toward his doctorate? How had he avoided the blue-collar life that seemed so certain in 1944, and spent 38 years as a teacher and elementary-school principal instead? Les raised his beer glass in toast to the 11 other 1944 Turtle Creek High School graduates who had gathered to shake hands, slap backs, display grandchildren's pictures and exchange embroidered memories about Mrs. Whittum's American history class.

"To the G.I. Bill!" Les said. "The G.I. Bill!" the others echoed.

The G.I. Bill of Rights, that is, a.k.a. Public Law 346, a.k.a. the Servicemen's Readjustment Act of 1944, clearly one of the most important pieces of legislation in American history. On June 22, 1944, as Pvt. Leslie Faulk was getting accustomed to the fit of G.I. fatigues, President Franklin D. Roosevelt signed the measure with so little fanfare that most major newspapers, overwhelmed with news of the Allied invasion of Europe, buried the story. Two years later people certainly took notice, though. American college campuses were flooded with young veterans (including 60,000 women and an estimated 70,000 African-Americans) who had never in their lives expected to be there.

Its impact can still be felt today. The G.I. Bill pulled a whole generation of Les Faulks up by their combat bootstraps and put them among the most educated and financially well-off generations in U.S. history. By granting a paid education to every qualified veteran, the bill transformed America's colleges and universities, cranked out a huge pool of trained professionals, changed the educational goals of the nation and fueled a giddy postwar boom. Suddenly a college degree was within the reach of millions—and remained that way.

A price tag of $5.5 billion

There were two periods in American history when rapidly expanding education eventually translated into economic gain. One was after the land grant colleges were established in the 1860s. The other was the era of the G.I. Bill, clearly the most farsighted veterans' program in history. G.I. Bill statistics are awesome. Out of 14 million eligibles, 2.2 million veterans jumped at the chance to attend college. At a cost of $5.5 billion, the first G.I. Bill turned out 450,000 engineers, 240,000 accountants, 238,000 teachers, 91,000 scientists, 67,000 doctors, 22,000 dentists, 17,000 writers and editors, and thousands of other professionals. Colleges that had languished during the Depression swiftly doubled and

As it did all over the country, the huge enrollment of veterans taxed the facilities at Indiana University.

James Graham went to Cornell on G.I. Bill and built career as an aerospace engineer on classified projects.

In 1944 Don A. Balfour, who owns an insurance company, became the first veteran to sign up for the G.I. Bill.

In 1946 registration of new students was done at temporary desks set up in Wildermuth Field House.

tripled in enrollment. More students signed up for engineering at the University of Pittsburgh in 1948 (70 percent of them veterans) than had in five years combined during the 1930s. By 1960 there were a thousand G.I. Bill-educated vets listed in *Who's Who.*

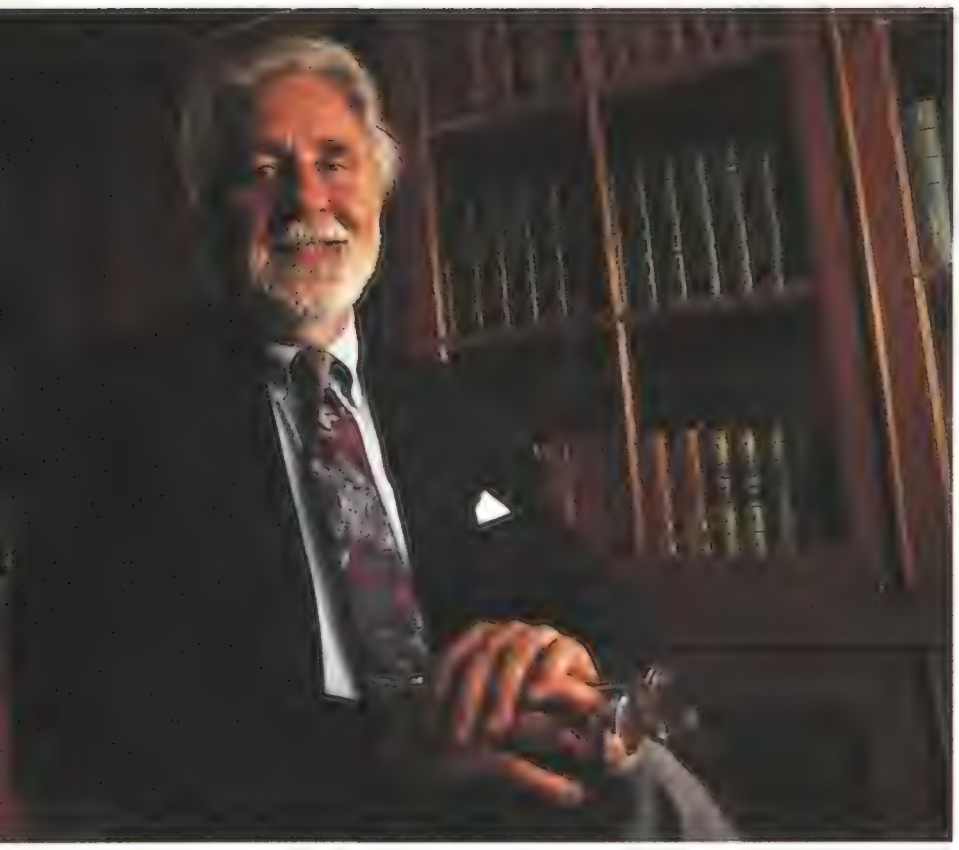
The astonishing thing about this human cascade is that practically nobody saw it coming. The measure squeaked through a Congressional committee only after some hardball lobbying by the American Legion and a midnight legislative rescue that its backers liked to compare to Paul Revere's ride. Moreover, the college-for-everyone clauses were really a kind of throw-in; the bill's real purpose was to keep the boys off the streets. Haunted by memories of the violent veterans' bonus march of the 1930s and gloomy warnings of a postwar depression with up to nine million unemployed, Congress made the main feature of the bill a program that guaranteed to veterans $20 a week in unemployment benefits for a year, which rapidly became known as the "52-20 Club."

Farm and factory, or college?

In 1944 everyone knew, absolutely *knew*, that only a handful of veterans would take advantage of Uncle Sam's offer to go to college. Experts predicted 8 to 12 percent. Veterans were expected to return posthaste to farms and factories. The *Saturday Evening Post* was so confident on this topic that it commissioned an article declaring that veterans had turned their backs on college. "G.I.'s Reject Education," a *Post* headline in the August 18, 1945, issue read. The G.I. Bill, an accompanying article stated, is "a splendid bill, a wonderful bill, with one conspicuous drawback. The guys aren't buying it." Two months after the article appeared, 88,000 veterans were "buying it." A year later there were a million.

Roosevelt's signature was hardly dry on the bill when the first applicant signed up. On June 23, 1944, the day after the White House ceremony, former corporal Don A. Balfour of Washington, D.C. called on John M. MacCammon, a Veterans Administration vocational officer. Balfour, who now owns an insurance agency near the White House, had been honorably discharged with poor eyesight. He was paying his way at George Washington University, editing the school paper, *The Hatchet,* and interviewed MacCammon for an article. "I asked Mr. MacCammon to explain the benefits to me," Balfour recalled. "Suddenly I said, 'Could I sign up for benefits?' He said, 'Certainly.' The forms hadn't even been printed, but by August I was officially on the G.I. Bill."

Although critics at first denounced the bill's educational benefits as a "handout" and predicted that "lazy" veterans would capitalize on them to shirk jobs, the 1944 bill guaranteed military personnel a year of education for 90 days' service, plus one month for each month of active duty, for a maximum of 48 months. Tu-



Layman Allen, Turtle Creek '45, went to Princeton and Yale Law, now teaches law at University of Michigan.

William Norris is a circuit judge and founding president of the Museum of Contemporary Art in Los Angeles.

ition, fees, books and supplies up to $500 a year would be paid directly to the college or university (at a time when private universities charged about $300 a year tuition and state universities considerably less). Single veterans were to receive a subsistence allowance of $50 a month, married veterans $75 a month.

That may not have been a bonanza, but it was plenty for a generation hardened by the Depression. In his book *The American Veteran Back Home,* sociologist Robert J. Havighurst followed 416 veterans who had returned to a prototypical town he called "Midwest." Twenty-eight percent—some of whom had not planned to go—used the G.I. Bill for college, he reported. He could have been talking about Les Faulk and the other young men of Turtle Creek '44. Of 103 male graduates in their high school class of 270, thirty earned college degrees, nearly ten times as many as had in the past; 28 of the 30 attended college under the G.I. Bill of Rights. The class produced ten engineers, a psychologist, a microbiologist, an entomologist, two physicists, a teacher-principal, three professors, a social worker, a pharmacist, several entrepreneurs, a stockbroker and a journalist (me). The next year's class matched the 30-percent college attendance almost exactly. The 110 male graduates of 1945 included a federal appellate judge and three lawyers, another stockbroker, a personnel counselor, and another wave of teachers and engineers. For almost all of them, their college diploma was a family first. Some of their parents had not completed elementary school—a few could not read or write English.

For their children, however, the G.I. Bill became a ticket of admission to a better life. On our spring-night reunion, the gray-haired, mainly retired "boys of '44" told one another tales of how a handful of legislative paragraphs had changed their lives. As they nibbled pizza and sipped beer, they spoke of houses, jobs, travel, knowledge and career accomplishments far beyond their wildest dreams of many years before.

Joe Valentich, for instance, had grown up on Prospect Street in Turtle Creek, among a cluster of Slavic immigrants who provided the strong backs and muscles for western Pennsylvania industries. "I don't think I heard a word of English until I entered first grade," confided Valentich, a Croatian-American whose father worked in an alloy plant. But the Army veteran proudly displayed two books with the brain-twisting titles *Short Range Radio Telemetry for Rotating Instrumentation* and *Tube Type Dilatometers: Applications from Cryogenic to Elevated Temperatures*—and the byline "Joseph Valentich." After a high school machine-shop diploma, he had earned a degree

The author, who wrote on apprenticeships in March 1993, went to the University of Pittsburgh on the G.I. Bill, earning a degree in political science, 1950.

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in mathematics and 45 graduate credits in math and physics at Duquesne and Pitt, shouldering superhuman loads of up to 23 hours per semester to graduate early.

Les Faulk, who fought in Germany as a Seventh Army infantryman, "matured awfully fast in a foxhole." When he returned home, his father arranged a job for him as an apprentice bricklayer at a steel mill. The job lasted one day. "I went to the poolroom and said to my old boss, 'I'm going to college.' He said, 'I read that only one vet in 20 who enters college will finish.' I said, 'I'm going to be that one.'" Alvan Hoffman had held an after-school job as mechanic's helper before entering the Army Air Corps. "My dad said, 'I can give you meals and a roof over your head, but I can't afford college.'" After discharge, he earned bachelor's and master's degrees in engineering and traveled the world, briefing military personnel on survival techniques.

With few models to follow but in a hurry to catch up, many of the Turtle Creek graduates made capricious, hasty academic decisions—which nonetheless paid off. Wyatt Young, center fielder on the baseball team, who had served in Europe with the Air Corps, chose a small West Virginia college he had never heard of, Bethany, because he was told a friend was going there. Bethany launched the farm boy on a successful career in advertising; he now owns a bookstore. Jim Graham, who became a university professor and then an aerospace engineer, applied to the engineering schools at Penn State and Cornell; he went to Cornell because it accepted him first. Navy veteran Alexander Yerman, the class valedictorian, applied for electrical engineering at Carnegie Tech (now Carnegie-Mellon). Told that the program was full, he simply switched to chemical engineering and built a career developing microchips.

Why go to Podunk U. when Uncle Sam will send you to Yale? *Time* magazine speculated in 1946. Bill Norris, Turtle Creek '45, now a U.S. Circuit Court judge in Los Angeles, and Layman Allen, professor of law and a research scientist at the University of Michigan, asked themselves that very question. When the two close friends learned about the G.I. Bill, Allen, who was stationed at Treasure Island, California, and Norris, at San Diego, met in Santa Barbara to discuss their educational future. Allen recalls: "I told Bill that a Navy friend had suggested we try for Princeton. We were small-town boys, what did we know? Bill said, 'Where's Princeton?'" Both got in and graduated. Afterward Norris went on to Stanford Law School, clerked for Supreme Court Justice William O. Douglas, practiced law in Los Angeles, ran for attorney general of California and was appointed to the bench in 1980. Allen went to graduate school at Harvard and then on to Yale Law. He became a nationally known authority on the application of mathematical logic to the analysis of legal problems. "Princeton opened all those doors for us," Judge Norris says. "But the G.I. Bill opened the doors to Princeton."

The two were typical of the new crop of students. Norris was the fifth of six children. None of his brothers and sisters had gone to college, nor had his parents. When he and Allen entered high school, they signed up for the commercial track—typing and secretarial skills. "We didn't expect college," Norris says, "but we didn't want to get our hands dirty in the mill. The plant had this big building full of offices, and we thought it would be nice to wear clean shirts and flirt with all the secretaries."

One day their biology teacher, Miss Chilcote, stormed in and made them go with her to the principal's office. "'What kind of school are you running?' she said. 'These boys shouldn't be in a commercial course. They could get scholarships to college.' She insisted that we be transferred to the academic track. We had a lot of credits to make up, but we did it," Norris recalls. In the class of 1945, the two took first and second honors.

Floating dormitories and Quonset huts

Meanwhile, campuses all across America were being flooded by ambitious veterans. Some 11,000 ex-G.I.'s attended the University of Wisconsin in 1946, swelling the total enrollment from 9,000 the previous year to 18,000. Rutgers University's enrollment jumped from a prewar 7,000 to 16,000 by 1948. Stanford went from 3,000 to 7,000 students within a year; four-fifths of the men were vets. There simply were not enough beds, teachers, classrooms and laboratories.

Some ingenious makeshift living and teaching arrangements resulted. Quonset huts and surplus barracks mushroomed on once pristine campus lawns. Marietta College in Ohio obtained a surplus Coast Guard vessel and anchored it in the Muskingum River as a floating dormitory. Stanford converted a former military hospital into one- and two-room apartments.

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To handle the influx of married veterans and their families, Stanford, like most colleges, had to set up special—and often grim—housing. Here, wives share day care of small children.

Prewar student bodies had consisted of single men and single women. No one was prepared for the postwar deluge of married couples and families; on some campuses, half the veterans were married. The University of Iowa hastily assembled a trailer camp in what newspapers described as "a sea of mud." Veterans had to carry water in buckets to their apartments. They and their families tiptoed across boardwalks to a common lavatory-bathhouse to take showers while, according to one report, "little boys played peekaboo." The University of Wisconsin threw up a similar "vetsville" with a central water outlet, but eventually the school opened Badger Village, a 699-unit complex that had its own post office, fire department, chapel, grocery store, barbershop and elementary school.

Concurrently, the easygoing Joe College life depicted in "varsity show" movies disappeared. One of the first casualties was the freshman beanie, the distinguishing skullcap traditionally worn by newcomers on many campuses. No 25-year-old freshman who had gone through the Battle of the Bulge and had a wife and two kids was going to put up with such a thing. Out went other hallowed traditions, too. At the University of Iowa, a certain romantically shaded bench had always been reserved for courting couples—by prewar tradition, every woman student would be kissed there before she graduated. Veterans saw the bench as just another convenient spot for study and shooed the amorous away.

Vets often had little time for extracurricular activities, campus politics or social life, but they made their presence felt in athletics. While recent high school stars sat on the sidelines, teams were dominated by 24- and 25-year-olds, some fresh from service squads. Bob Chappuis, the star halfback of Michigan's 1947 championship team, was an ex-aerial gunner who had bailed out over Italy on his 21st mission. When Chappuis lost the Heisman Trophy, it was to Johnny Lujack of Notre Dame, who was back from three years as a Navy ensign.

Worse yet, women students preferred the dashing ex-servicemen, with their scars and battle jackets, to fuzzy-faced 18-year-olds. As for the vetsvilles, they had a life and an atmosphere unlike anything the campuses had seen before. Prior to World War II, a student could be expelled from many colleges if he or she got married. But veterans were creating families as fast as they could get to the altar; so many babies were born in one section of the University of Minnesota veterans' housing that it was nicknamed "Fertile Acres." Baby carriages were parked under the campus elms; drying diapers fluttered in place of college pennants. For the young wives, it was a hectic life under primitive conditions, with responsibility for governing the communities while their husbands studied and often worked part-time as well.

Between books and babies, there wasn't much social life, recalls one vet's wife who lived in Stanford Village. What there was revolved around meetings in the com-

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On June 22, 1944, President Roosevelt signs G.I. Bill as members of Congress and Legionnaires look on.

mon laundry room and wives' gabfests in the children's play yards, which the "daddies" had constructed with scrounged scrap lumber.

"If there is a baby," a Columbia sociologist had solemnly intoned as late as 1945, "college is almost out of the question for any reasonable man." In fact, fathers turned out to be the most diligent students. Grade-point averages hit a record high at Stanford the first year the veterans were back. Flunk-outs and absenteeism hit an all-time low. Other Stanford students called the veterans "DARs"—"Damn Average Raisers."

The veterans' hurry-up pace revolutionized the colleges' old, easygoing schedule. Summer vacation almost disappeared. At Stanford before World War II, only 7 percent of the classrooms were occupied at 2 P.M. By 1946-47, classes were beginning at 7 A.M. and running until past the dinner hour. "Lights still blazed in the Quad at 11:30," the *Stanford Alumni Review* marveled.

Faculties, their ranks already depleted by the war, were stretched thin. Wallace Stegner, who taught literature and creative writing at Stanford, once recalled that his pre-G.I. Bill classes could be comfortably seated around a dining-room table. By 1947 he was teaching 160 students—and grading as many papers, since he had no graduate assistants to help him.

Professors at some universities were accustomed to prep school types who dutifully took notes but weren't all that interested in real lessons. Those teachers had a tough time dealing with grown men. One veteran recalled a student who interrupted a Contemporary Affairs lecture with "Don't tell me about China. I've been there." A Spanish professor directed a veteran to write a mistranslated sentence 100 times, as if he were in eighth grade. The vet simply laughed at him.

A minority of faculty deplored the driven young men who were "ruining" the college in their haste to gain a diploma and get to earning a living. They were missing the essence of college life, these professors complained. Said one Stanford professor of the faculty critics, "They couldn't cope with students who didn't swallow goldfish or hold all-night parties." But most found the atmosphere stimulating. Having taught at Pitt for more than 50 years, economics professor Reuben Slesinger recalled, "The vets were very good, very motivated."

The idea that Uncle Sam should help veterans with their education was not exactly new. After World War I, the states of New York and Wisconsin set up programs under which certain veterans could receive academic or vocational training at government expense. In 1941 Canada began considering such a plan. President Roosevelt, an Assistant Secretary of the Navy during World War I, had long been concerned about the government's role in planning for the veterans' return to civilian life. By 1942 the educational community, headed by the august American Council on Education, was quietly sketching out suggestions for veterans' educational benefits. But the issue really began to move when it caught the attention of the American Legion, which had enormous political clout. To this day, several local Legion posts still claim they "originated" the G.I. Bill.

Veterans' groups wrangle over the bill

Eventually, after lining up political support and testing the waters, a Legion committee in fact prepared a draft bill. One winter evening in 1943, Legionnaire Harry Colmery sat down in a suite at the Mayflower Hotel in Washington, D.C. and wrote out the proposal in longhand. Hearst newspapers began a drumbeating campaign for the bill. Yet it was almost strangled at birth in a bizarre political turf battle and a fuss over tactics. It was saved, finally, only through a last-minute, cliff-hanger rescue worthy of Hollywood.

The Legion had thrown all its weight behind its "omnibus" bill (opponents called it an "ominous" bill), which lumped veterans' educational and medical benefits, on-the-job training, home and farm loans, and unemployment payments into one measure. Other veterans' groups initially disagreed, urging Congress not to be "stampeded into hasty and possible unwise legislation." Some organizations worried that the omnibus tactic would allow opponents of individual features to gang up and defeat the whole package. The Disabled Veterans of America feared that wounded and disabled G.I.'s

might be shortchanged if benefits were given to all.

Partly as a result, one version of Public Law 346 passed the Senate, while another passed the House. The bitter struggle to reconcile the two threatened the bill's survival. At stake were sharp differences about such issues as states' rights (would a new, perhaps state-controlled, office administer the funds or would the Federal Employment Service?), veteran eligibility (should it include all veterans or just those whose schooling had been interrupted?), and varying degrees of hostility to unemployment benefits (which some legislators thought likely to promote indolence).

The conference committee trying to sort things out contained seven Senators and seven Representatives. The Senators offered a compromise bill that three Representatives agreed to. But three others, led by the powerful states' rights proponent John Rankin of Mississippi, rejected it. The seventh and deciding voter, John Gibson, was back home in Georgia. He had submitted a proxy vote to Rankin, but when it turned out to be for the compromise, Rankin refused to honor it. On June 9, the conferees remained deadlocked, and Gibson was still away. Under the conference rules, the two committees had to agree by 10 o'clock the next morning or the G.I. Bill would die.

Opponents were confident the bill had been at least temporarily defeated. When the Legion decided that Gibson must somehow be hauled back bodily to cast the deciding vote it was already past 6 P.M. and nobody could find him. He was believed to be heading home to Douglas, Georgia, after a speech at Valdosta, 70 miles away. Later that evening the pro-bill *Atlanta Constitution* got into the act; a telephone operator started calling Gibson's home every five minutes. Radio stations broadcast an appeal for anyone knowing Gibson's whereabouts to "call operator 2 in Washington immediately."

Just after 11 P.M. Gibson answered his phone in Douglas. With a Georgia state motorcycle-police escort, he was driven to an Air Force base in Waycross and transferred to a military car, which raced through a slashing thunderstorm at 90 miles an hour toward Jacksonville, Florida, where the Legion had a plane waiting. At 6:37 A.M. on June 10, less than four hours before the deadline, Gibson's plane touched down in Washington. Promptly at 10 A.M. he appeared at the committee room and cast the deciding vote.

With enrollment doubling in mid-1940s, hundreds of trailers were moved onto the University of Indiana campus to provide student housing. Like many other makeshift villages, individual units had no plumbing.

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Lofty perspectives: the silk batiks of Mary Edna Fraser

Using aerial photographs, satellite images and other aids, a bold artist creates works that capture the essence and palette of place

Artist Fraser pauses in cockpit of family's vintage Ercoupe before exploratory flight out of Charleston, South Carolina, her home since 1985. *Charleston Red* (opposite) was based on charts of the city's waterways.

On a flight over Georgia's Sea Islands in 1980, textile artist Mary Edna Fraser discovered the "endless horizon of design" revealed by altitude. Beguiled by the shifting perspectives and patterns wrought by loft and light, intrigued by the interplay of land, sea and sky, she glimpsed the limitless riches of an aerial aspect. It came to her that she could spend the rest of her life traveling, exploring color, dyeing cloth, and never be bored. A title for an exhibition even took form—"Islands from the Sky." Sailing through clouds, eyes fixed on the images unfurling below, she had envisioned her future.

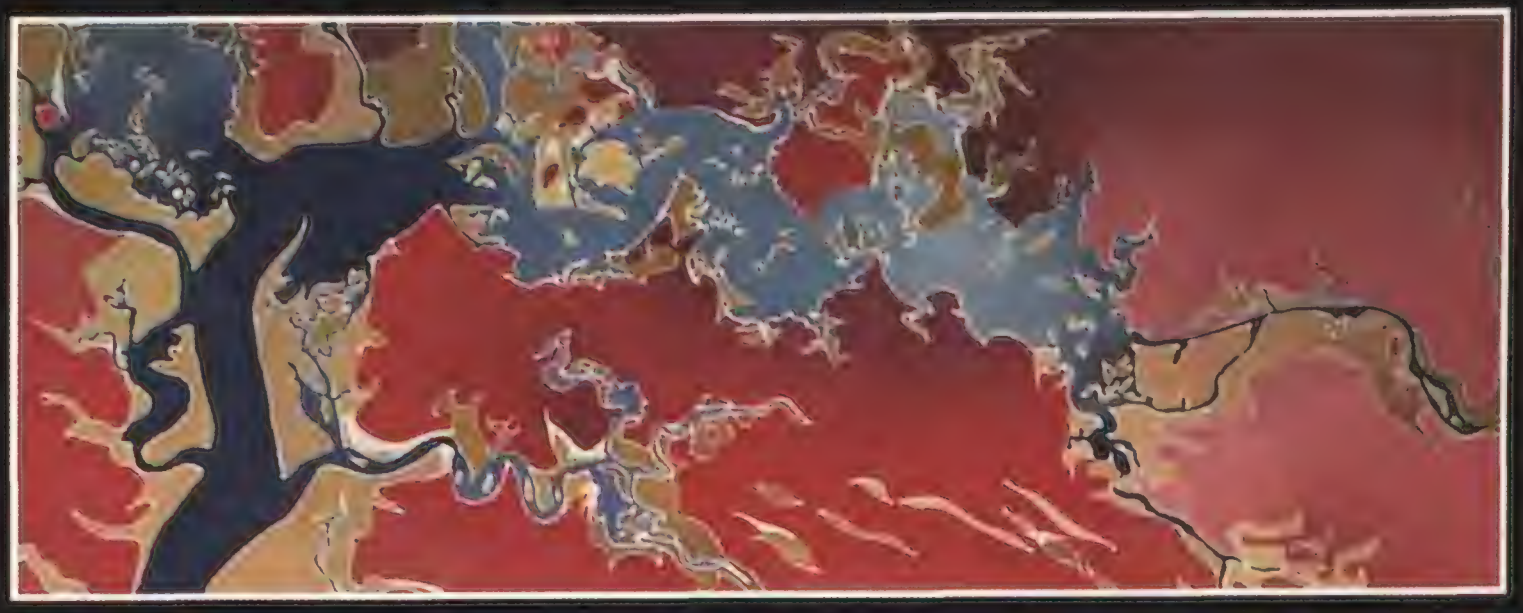
Some 14 years, countless air miles, five shows and more than 100 commissions later, Fraser is living her dream. As a student pilot, she records the coastlines, islands, mountains and waterways of the United States in aerial photographs often taken from her family's plane, a 1946 Ercoupe 415-C, piloted by her father or brother. When the scale of the landform requires, she works with Smithsonian's National Air and Space Museum Center for Earth and Planetary Studies to obtain satellite images. She then renders those views into large-scale silk batiks; her most ambitious, a 222-foot draped sculpture, hangs in the Charleston International Airport. Now, more than 50 of her works are featured in NASM's first one-woman show: "Aerial Inspirations: Silk Batiks by Mary Edna Fraser," on view through June 4, 1995. A compelling meld of art and science, the batiks portray the artist's vision of the shapes and contours of this land—from the jagged peaks of the Rockies to the forest-clad ledges of the Blue Ridge, from the salt beds of San Francisco to the estuary of the Chesapeake Bay.

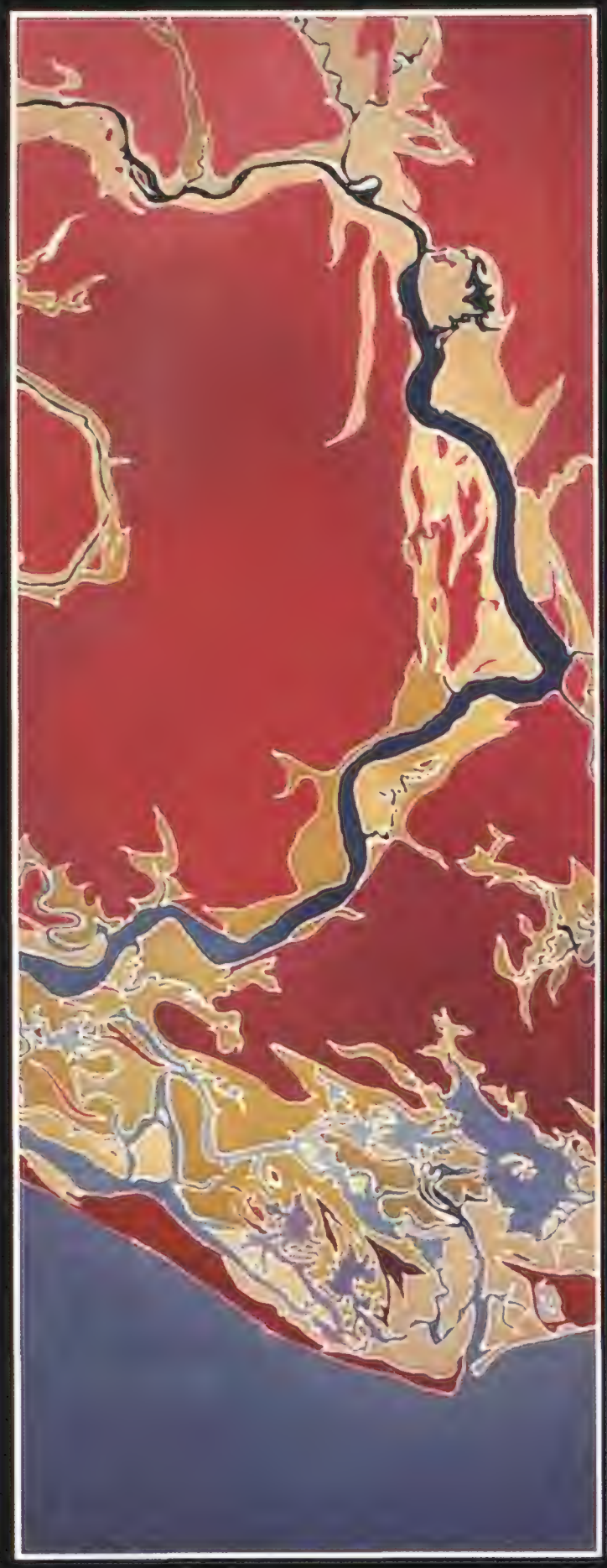
"Fraser's works depict an organization and sensuousness in the land that is visible only from the air," says exhibition curator Susan Lawson-Bell. "One of the most fascinating things about her work is how she can look at a particular area and see it in more than one way—as with the North Edisto River in *Charleston Red* and *Curling River*" (p. 144).

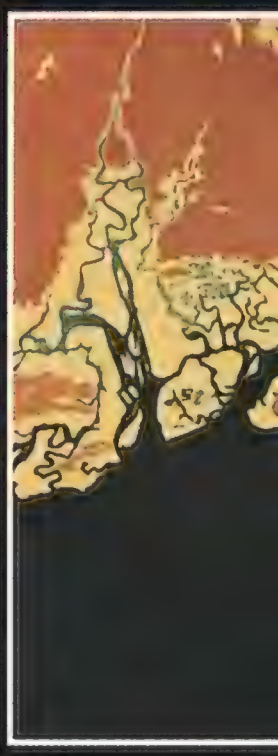
Combining batik—the ancient technique of dyeing textiles—with such modern developments as chemical Procion dyes, Fraser creates images that are replete with double entendres: rivers become bonsai trees silhouetted against a sunset, or dragons, or mermaids, or branches reaching out to embrace the land. Her palette is painterly, and the influence of Asian Art, particularly Japanese wood-block prints, and the works of such artists as Henri Matisse and Georgia O'Keeffe is clear.

"My works track the snaking of tidal creeks through marsh grass, rivers cutting paths between islands, and the ocean sculpting sandbars on the coast," she says. "Each variation in altitude, season, tide, location or light holds a new surprise." And where will her art take her next? "To other worlds," she answers. "To a series of images based on the surface patterns of the planets."

Diane M. Bolz

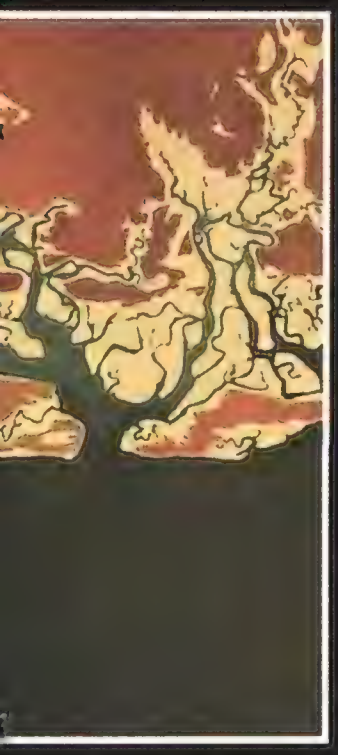


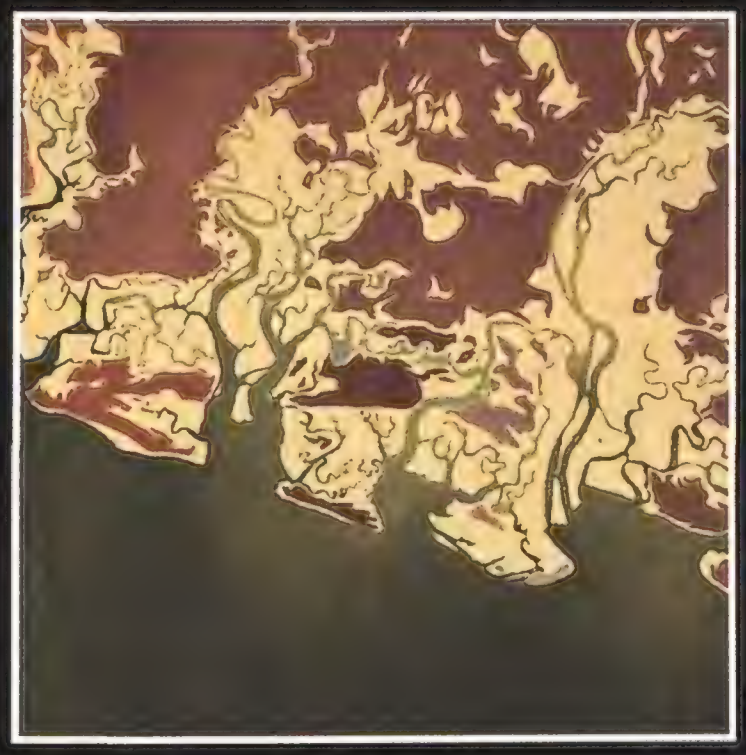




Eye of Hurricane Hugo depicts storm that destroyed the artist's studio, paying homage to its size and force.

The convoluted North Edisto River, outside Charleston, becomes a flaming dragon in *Curling River* (1988).





In the tripartite *Sea Islands of Georgia* (1994), rivers become bonsai limned against a sunset.

Fraser used a Landsat satellite image to create elongated profile of the Chesapeake Bay (1993).

Snow-encrusted peaks of Rockies emerge from behind a threatening cloud in this 1991 batik.

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By Donald Dale Jackson

The art of wishful shrinking has made a lot of people rich

But it has not made many thin—or at least not for long. Diet sensations come and go, but excess weight seems to hang on forever

Any day now it's coming, you can bank on it—the ultimate no-pain, no-sacrifice, no-hunger, eat-all-you-want diet, guaranteed medically and nutritionally sound, effortless, and did I say *guaranteed*, that's right, and all in a book for a mere $24.95, your money back if not delighted and transformed into a new, wonderful, slimmer you in, oh, three weeks tops. Listen—hear that tapping in the far reaches of the doctor's office? He's finishing it now, publication is a couple of months off; they're just buttoning up paperback rights.

The author-promoter of the next diet sensation will take his or her place in a long, gaudy and intermittently felonious procession of gurus and messiahs who have lived well while dispensing weight-loss wisdom, more or less. Happily for them, there has ever been a huge reservoir of pudgy people ready and willing to snap up the latest offerings. As the apostles of slenderness know full well, rare is the overweight individual who will not do almost anything to improve his or her appearance—and, of course, the less a diet requires one to do, the more likely one is to try it. This is why dieting has become such a big business. In 1993, Americans spent around $30 billion on books, video tapes, nutritional aides, reducing salons and other diet-related goods and services. If some would-be dieters are hanging back now because of the latest scientific reservations about the long-term value of self-denial, just wait until the new book comes out. They'll find it impossible to resist.

"There has always been a huge reservoir of pudgy people ready and willing to snap up the latest diet."

Doctors have been the most conspicuous promoters, especially in recent years, but diet hustling is an equal-opportunity field. Tycoons and housewives have had a go at it, as have self-styled "nutritionists" of a dozen different shadings, preachers and writers and actors and a few with no credentials whatever, people who seemed to wander in off the street to conjure up a diet plan. One of the first such savants in the historical record, as it happens, was a mid-19th-century London undertaker.

His name was William Banting, and his problem was that at age 65 he had 14 stone 6 (202 pounds) of lard lumpily distributed on his 5-foot-5 frame. He couldn't tie his shoes or descend a staircase frontally, and he was going deaf. Banting tried rowing and horseback riding, purgatives and diuretics and Turkish baths, but nothing worked until his doctor prescribed a diet free from sugar and starch. When he dropped 52 pounds on a regimen of lean meat, vegetables, dry toast and soft-boiled eggs (with a daily alcoholic toddy), when his hearing improved and he could again navigate a stairway with dignity, Banting the pioneer dieter became Banting the promoter, producing a book that had sold 58,000 copies by the time he died in 1878.

In this country, Horace Fletcher attained early dietary eminence as "The Great Masticator." Fletcher parlayed a fanatical dedication to the act of chewing, a serene self-assurance and some remarkable physical exploits into a career as a self-taught expert on diet and health just after the turn of the century. Fletcher was a cosmopolitan businessman who made a fortune in ink and imports only to find himself at age 40 unable to buy life insurance because he was a white-haired, 217-pound blob.

The turning point came when a friend told him about former British prime minister William Gladstone's conviction that proper and prolonged chewing precluded overeating and led to good health. It was not a totally novel notion, since vigorous chewing had been viewed as an aid to digestion for years, but Fletcher embraced it like a sinner saved. Gladstone had counseled 32 chews per morsel, one for each tooth in a normal mouth, but Fletcher, soon known as "the chew chew man," raised the dental ante and urged that all food be munched until it turned to liquid. Never mind if it was liquid already—soup and milk were to be "chewed" as well. Fletcher argued further that any food that did not liquefy under such relentless mastication should be spit out. That eliminated roughage and thus made constipation a problem to be reckoned with.

Fletcher, by now 65 pounds lighter and down to one noisy, drawn-out meal a day, did what all diet mavens do: he wrote a book, *The AB-Z of Our Own Nutrition.* He dressed in white suits, bought a house in Venice and churned out articles claiming that 200,000 families in

Illustrations by Lane Yerkes

"Fletcher, soon known as 'the chew chew man,' urged that all food be munched until it turned to liquid."

the United States lived by his precepts. Students at Yale and West Point "fletcherized" their meals. The faithful in Britain had "munching parties"; John D. Rockefeller solemnly fletcherized. Fletcher's own weight fluctuated—one professor described him at 55 as "rather plump than otherwise"—but he now appeared to be mostly muscle. At 58 he performed the astonishing feat (or so he claimed) of lifting 300 pounds dead weight 350 times with his right leg, double a previous record.

Fletcher eschewed meat, alcohol, coffee and tea. His meals ran to potatoes, cornbread, beans, sometimes eggs and toast, and the occasional stewed tomato. His guidelines were light on specific food groups but heavy on the attitude the eater brought to the table. Rule No. 1 was "wait for a true, earned appetite." A diner could eat what he wanted as long as he chewed till the food "swallowed itself," and no "depressing or diverting feelings" were to intrude at mealtime. The consequences would be complete and easy digestion, perfect health, and a farewell to eczema, headaches, pimples, boils and "that foggy feeling."

In his sunset years, the man once denounced as a food crank became a venerated figure, but the Great Masticator's star eventually faded. Early adherents like Dr. John Harvey Kellogg, of the Battle Creek, Michigan, cereal Kelloggs, defected over the roughage issue, adding the gratuitous observation that Fletcher's breath was "highly malodorous."

A little book printed a year before Fletcher's death at 70 in 1919 showed that in dieting, as in other difficult but rewarding pastimes, the best advice is not always the latest word. Dr. Lulu Hunt Peters, who wrote *Diet and Health, with a Key to the Calories*, had a precocious grasp of the awful truth that millions would ultimately spend billions to avoid: successful dieting was a hard, demanding, lifelong commitment. Having pared her own weight from 200 to 150, she told her readers that "no matter how hard I work—no matter how much I exercise, no matter what I suffer, I will always have to watch my weight, I will always have to count my calories."

Calorie-counting was still a novelty when Dr. Peters, a physician in Los Angeles who wrote a syndicated health column, introduced it in her book. (A calorie is a unit of measurement representing the energy-producing value of food.) Addressing herself mainly to women, then as now the foot soldiers in the diet forces, she instructed them to use the word "calorie" as routinely as they used "pound," "gallon" or "yard." "Hereafter you are going to eat calories of food," she wrote. "Instead of saying one slice of bread or a piece of pie, you will say 100 calories of bread, 350 calories of pie."

Her diet began with a fast to show the body who was boss, then imposed a 1,200-calorie daily limit, followed by a more relaxed but permanent—as in *forever*—maintenance plan. The Peters preachments of self-denial and self-discipline won the endorsement of government agencies while selling two million books, making hers the first and one of the best in a long and often odious line of American diet-book best-sellers.

Two other leading lights of the diet roadshow in the 1920s and '30s took a different approach. Dr. William Howard Hay and Gayelord Hauser were forerunners of what was waiting down the road in the wide-open, largely unregulated diet biz. Promoters of soft, semiscientific hustles that defied the medical establishment while profiting from Americans' nutritional gullibility, they were early masters of the art of wishful shrinking.

Hay, who operated out of a resort he called Pocono Hay-ven, Pennsylvania, decreed that proteins, starches and fruits had to be eaten separately to avoid acidosis, which drained vitality and led to fat. One food category per meal was the best way—plus a daily enema to flush out the poison. Henry Ford obediently chomped down

Author Jackson, who gained six pounds while doing this story, says he plans to see The Road to Wellville, *a new film on health enthusiast John H. Kellogg.*

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Soon it will be easier to avoid General Motors cars and trucks. That's the advantage of daytime running lights, according to Joe Griffin, lighting engineer at General Motors Inland Fisher Guide division. Daytime running lights are special headlights that come on whenever you start your engine. Cars that have them are often easier to see, and that can help other drivers avoid collisions. This fall, General Motors will be the first automaker to offer low intensity daytime running lights as standard equipment on thousands of its U.S. cars and trucks. They could make your time on the road safer, even if you don't drive a GM vehicle.

on fruit at breakfast, carbohydrates for lunch and proteins at dinner. Critics churlishly pointed out that nature had already mixed proteins and carbohydrates in many foods, and that the digestive system handles the mix with minimal difficulty, but Hay diets still lured millions.

Hauser was one of the earliest dietmeister-showman-moguls, a suave, charismatic European with a vaguely academic background. (He was an N.D., or doctor of naturopathy, a system of treatment that uses natural substances to help the body heal itself.) He enjoyed showy cars and the company of film stars like Greta Garbo and Paulette Goddard. He lectured, wrote best-sellers (*Look Younger, Live Longer*), developed his own lucrative line of special foods and supplements, and for a time indulged a Fletcher-like preference for white suits.

His 10- and 28-day diets stressed his five vitamin-B-heavy "wonder foods"—brewer's yeast, wheat germ, yogurt, powdered skim milk and blackstrap molasses. Hauser agitated medical hackles with pronouncements like his claim that we all have both an "appestat," which he defined as an acquired appetite for the wrong stuff, and a "hungerstat," or craving for nutritionally correct foods. He and Garbo sometimes shared hungerstat-driven lunches of wild-rice burgers and broiled grapefruit.

By the time Hay and Hauser bestrode the diet whirlwind, the public was beginning to flinch under a baffling bombardment of confusing claims. One expert, for example, plumped for a breakfast of whole-wheat pancakes with maple syrup, another advised vegetable soup, and a third urged melon, peaches or berries, a baked potato and broiled fish. Special combinations of foods, "magic pairs" like lamb chops and pineapple, were touted as bearers of unique "fat-burning" properties, a notion debunked by two generations of scientists.

"Instead of saying one slice of bread or a piece of pie, say 100 calories of bread, 350 calories of pie."

From belts to creams to salts to . . .

In such an atmosphere it was little wonder that almost any device, instrument or lotion that promised weight loss without the bother of stress or sacrifice found a ready market. As far back as the 1890s, a Boston druggist had peddled a corsetlike "obesity belt" bearing electrically charged disks that purportedly dispelled intestinal gas, disintegrated fat and dispersed tumors. By the 1930s, dieters could rub away flab with "reducing creams," melt it away with bath salts, or jiggle it away on a "Slendro Massager Table" or "the magic couch."

Slenderella reducing salons, which first appeared in 1950, invited women into curtained booths where they listened to piped-in music and quivered fully clothed on a specially designed vibrating table. They remained clad because of founder Larry Mack's belief that the "only place a respectable woman ever took her clothes off was her bedroom." Customers were given low-calorie diets disingenuously labeled "menu adjustments" to preserve the illusion that nothing so taxing as a diet was called for. By 1955, more than 16,000 women were shimmying daily in more than 100 Slenderella salons and shelling out $2 for each of the 30 to 150 sessions. Despite a Food and Drug Administration (FDA) warning that no device was effective for "spot reducing, melting away fat or breaking up fatty deposits," it was the Internal Revenue Service and not customer discontent that brought Slenderella down in 1959. The name was later sold to a company that made low-cal jelly.

Dieting, the American Medical Association (AMA) declared in the mid-1950s, had become a national neurosis. Thinner was better—more attractive, more youthful, healthier, more productive. And if a product could deliver thinness in a reasonably palatable form, the possibilities were limitless. At least that's how it looked for the Mead Johnson drug company and the product Metrecal—short for "metered calories"—in 1960.

Metrecal came as a powder made from milk, soya flour, starch, corn oil, yeast, vitamins, coconut oil and

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"Every one of her ten doctors prescribed diet pills, most after only a cursory exam and conversation."

chocolate, vanilla or butterscotch flavoring. A $1.59 can contained 900 calories and when mixed with four glasses of water provided a day's nourishment. (Metrecal was also sold in a premixed, liquid form.) It satisfied hunger, and it seemed to satisfy the medical establishment, which detected no nutritional Achilles heel. A dieter didn't even have to count calories and commonly dropped about ten pounds in two to three weeks. All of this accompanied by a smooth advertising campaign produced a bonanza: Mead Johnson's profits rocketed from $5.5 million to $13.3 million in a year.

Then, suddenly, consumers stopped buying. Nothing happened—no revelation, no assault in the courts. People simply got tired of swilling the same stuff meal after meal. Profits went south in 1962 and '63 while the company scrambled up a Metrecal cookie that failed to halt the plunge. Somebody suggested that Metrecal palled because people missed chewing; the Great Masticator may have been on to something after all.

Metrecal's boom and bust, like the profusion of exercise salons and the swelling numbers of diet books (from 60 in the 1960s to 260 in the '70s), diet foods, diet doctors and especially diet pills, was another sign that the diet biz was now a big-ticket enterprise. A 25-cent calorie-counter book that first appeared in 1951 had sold 17 million copies by 1973. Diet pills in one form or another had been around for decades. A pamphlet one drug company distributed to doctors illuminated the ethics of the diet-pill trade: recommend NO diet or exercise, the company advised, prescribe plenty of tablets and demand payment in cash.

Take these whether you need 'em or not

In 1968, when *Life* magazine dispatched reporter Susanna McBee to visit ten "fat doctors" as an undercover patient, the FDA estimated that as many as 7,000 such practitioners were doling out more than two billion diet pills annually, including diuretics, barbiturates, amphetamines, thyroid tablets and laxatives. McBee, at about 5-feet-6 and 125 pounds, was anything but obese. Every one of her ten doctors prescribed pills, most after only a cursory examination and conversation; one saw her for three minutes and gave her 150 capsules. Her total haul from the ten healers was 1,479 pills.

The vilest potion concocted in the name of weight reduction was doubtless the liquid protein mixture popularized by Dr. Robert Linn in his 1970s book *The Last Chance Diet.* Like Banting and Fletcher in dieting's more innocent era, Linn presented himself as an ex-portly advertisement, claiming he had dropped 83 pounds while subsisting on his syrup. It was a loathsome blend of crushed animal horns, hooves and hides mixed with enzymes, tenderizers—one would hope so—and fruit flavoring. The idea was that 300 to 400 calories a day of this glop would sustain a person who was otherwise fasting. The AMA warned of side effects like renal and coronary disease. The FDA and the Centers for Disease Control investigated several dozen deaths among liquid protein consumers, but an estimated two million to four million hard-core dieters tried it anyway.

Esther Manz of Milwaukee became a diet-club pioneer after learning about the Alcoholics Anonymous network. She had no product or plan to hustle, just a consignment of fat to shed and the belief that it would be more pleasant to lose it amid an agreeable, mutually supportive group. She nourished the idea during a year of therapeutic weekly meetings with a few friends, lost 45 pounds and emerged with TOPS—for Take Off Pounds Sensibly (some called it Tomorrow Or Pretty Soon)—the first national dieting organization.

The TOPS clubs that blossomed around the country

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606 Australian Tourist Commission. *"Australia: Discover It!"* – Glimpse the Australian experience: the Outback, the Great Barrier Reef, the cities, the mountains, the beaches. Get to know the Aussies!

657 China National Tourist Office. *"China"* – The world's oldest civilization emerging into modern times. Natural beauty to enjoy and friendly people.

666 Hong Kong Tourist Association. *"Behind the Mask"* – As exciting as Hong Kong is, half the fun is how you get around to see it. Sail leisurely on a Chinese junk. Ride a double-decker bus. Or toast the night from a polished old tram.

613 New Zealand Tourism Board. *"New Zealand on My Mind"* – Described as a world in miniature, New Zealand offers myriad sights and adventures… trek among magical rain forests, sail around subtropical islands, sense the power and mystique.

686 Tahiti Tourism Board. *"Tahiti and Her Islands"* – The balmy trade winds of Tahiti and her islands breathe romance. Stroll past towering palms on secluded, sun-drenched beaches by day, and dance away the nights under a million tropical stars

803 Thailand Tourism Authority. *"Exotic Thailand"* – Discover the Treasures of a Kingdom. Come, feel the warmth of our hospitality, enjoy the richness of our culture, spend a carefree holiday in tropical paradise and relax in the luxury of our legendary hotels.

ATLANTIC/CARIBBEAN

528 Bermuda Dept. of Tourism. *"Bermuda: In Your Life"* – The Beatles' classic "In My Life" sets the stage for a video visit to one of the loveliest islands in the world. Civilized and sophisticated, this tiny country has a story worth singing about. Hosted by M*A*S*H star, David Ogden Stiers.

780 Bonaire Tourism Office. *"The Natural Choice"* – Discover an unspoiled paradise in the Southern Caribbean, world-renowned for its spectacular diving, crystal-clear waters and natural wilderness park. Discover why Bonaire is "The Natural Choice."

590 British Virgin Islands Tourist Board. *"Nature's Little Secrets"* – Escape to our serene environment, where nature provides drama, beauty and relaxation. Exciting water-related vacations amid first-class amenities.

652 Dominica Tourist Board. *"Nature Island"* – Dominica has rain forests, green mountains, waterfalls, lakes and extraordinary diving. Its gentle and hospitable people are proud of their "nature island."

534 Puerto Rico Tourism. *"Puerto Rico: The Shining Star of the Caribbean"* – No other island in the Caribbean offers such a diversity of experiences and such a colorful history. Puerto Rico is a paradise for scuba divers and water lovers.

582 St. Kitts & Nevis Tourist Board. *"The Secret of the Caribbean"* – This two-island nation provides an ideal climate, tropical rain forests and golden sand beaches.

584 United States Virgin Islands Tourism. *"Follow a Rainbow"* – An entirely new concept in travel films, with the cultural aspects of a destination as counterpoint to the sun, sand and sea of a Caribbean vacation.

CRUISES

624 Celebrity Cruises. *"Meridian Ultimate Caribbean"* – Explore places like Virgin Gorda and Mayreau while enjoying Celebrity's exceptional service aboard the Five-Star MERIDIAN.

626 Clipper Adventure Cruises. *"In the Spirit of Adventure"* – Clipper's mission – to use small, maneuverable ships to take curious travelers to places of natural beauty – is captured in this award-winning documentary.

656 Ivaran Lines. *"The M.S. Americana"* – The world's most luxurious passenger/freighter, with a reputation for handling the things we transport with care. But for the adventurers who come along for the ride, we go even further.

768 Norwegian Cruise Line. *"Dreamward/Winward"* – NCL proudly presents two brand-new sister ships, the DREAMWARD and the WINWARD, sailing the most enticing ports of call in the Caribbean and Bermuda.

630 Regency Cruises. *"The Regency Difference"* – See the difference between an ordinary cruise and a Regency Cruise Experience on-board amenities and visit the Caribbean, Alaska, Canada and South America

631 Royal Caribbean Cruise Line. *"Alaska"* – Experience the awesome splendor and rugged beauty of the Alaska wilderness from the warmth and elegance of the SUN VIKING, our award-winning cruise ship.

632 Royal Caribbean Cruise Line. *"Bermuda"* – Experience a glimpse of Royal Caribbean's spectacular cruise to the enchanting island of Bermuda. Preview all the wonder, beauty and sheer fun of Royal Caribbean

633 Royal Viking Line. *"Quality by Design"* – Enjoy a smaller, intimate cruise experience with all the amenities aboard the 212-passenger QUEEN. Sail to the world's finest destinations in luxury and style.

634 Sun Line Cruises. We'll make you feel at home cruising the Amazon, Panama Canal, Mayan Equinox Friendliest staff, top lecturers, luxury ship – see it all on our informative video cruise

EUROPE

653 Abercrombie & Kent. *"Luxury Barging"* – Elegant journey through the waterways of France, Holland and England. Spend days exploring the countryside or peacefully watching it pass.

607 Austrian National Tourist Office. *"Austria"* – This lively video presents Vienna and Salzburg and much of the countryside in between, with a focus on practical advice and money-saving travel tips.

608 Belgian Tourist Office. *"Belgium in Fourteen Minutes"* – Come and enjoy Belgium. Experience the fine cuisine and don't forget to bring back our famous chocolates.

609 Berlin Tourist Office. *"Berlin as Told by Its People and Visitors"* – The magical city that stole the world's heart when the Berlin Wall fell. United again, Berlin is captured on film by an American film crew.

521 Bombard Balloon Adventures. *"Tour Summary"* – Treat yourself to a memorable series of joyous and colorful flights through some of the most dramatic and beautiful scenery in Europe

736 Danish Tourist Board. *"Denmark: A Danish Symphony"* – Small is beautiful. Denmark is both. But it makes a big impression and welcomes you in a big way.

611 Irish Tourist Board. *"The Emerald Isle"* – Discover the scenic splendor of the magnificent Western Seaboard and the lively cities and towns. Sample the lifestyle of this enchanted European island

527 KD River Cruises Of Europe. *"Rhine Impressions"* – Cruise the Rhine, where KD, the oldest passenger line in Europe, has been operating for more than one hundred sixty-five years.

612 Lufthansa German Airlines. *"Germany for all Seasons"* – An award-winning video travelogue of Germany – the first since German Reunification – highlights traditional German charms: Berlin, Bavaria, Heidelberg, the Rhine and introduces eastern Germany.

617 Portugal – TAP Air Portugal. *"An Invitation to Portugal"* – Discover a land of spectacular beauty, fascinating culture and warm hospitality… Portugal. Fly in luxury and comfort to this land of inspiration.

597 Rail Europe. *"Europe By Train"* – This video guide teaches the ins and outs of traveling the 100,000-mile European rail system, detailing types of trains, accommodations and rail passes used to simplify travel and save money.

651 Swiss National Tourist Office. *"Brienz"* – Traditional Switzerland at its best. Spectacular scenery, friendly people, myriad recreational/cultural choices.

619 Venice Simplon – Orient Express. *"Orient Express"* – Relive the golden age of travel. Superb service and complete luxury aboard the King of Trains as you travel through Europe's spectacular scenery.

LATIN AMERICA

603 Brazil – Varig Brazilian Airlines. *"Worlds of Brazil"* – This video will whet your appetite for the destination of a lifetime. Gorgeous people, great food, fantastic music and culture.

638 Colonial Cities of Mexico. *"The Colonial Cities of Mexico"* – Step back to the charm and splendor of 16th-century Mexico From Morelia to Zacatecas, visit over fifty Colonial Cities and five hundred years of Mexican history.

610 Costa Rica Tourist Board. *"Imagination"* – Imagine trekking through rain forests, shooting down rapids, or observing fascinating wildlife. An ebullient mix of European and tropical traditions

NORTH AMERICA

808 Alberta Tourism. *"Alberta in All Her Majesty"* – Explore Alberta's great natural beauty. From the inland seas of prairie wheat to the soaring peaks of the Canadian Rockies – discover an Alberta that is unspoiled and unchanged

546 The Cloister Hotel. *Sea Island, Georgia* – An "understated elegance" best describes this Five-Star island resort. Explore what has made this hotel a favorite destination

650 Holland America – Westours. *"Experience Alaska"* – Discover Alaska's breath-taking scenery, culture and abundant wildlife in this award-winning video. From the peak of Mt. McKinley to Glacier Bay National Park.

516 Maui Visitors Bureau. *"There's Nothing Like it Under the Sun"* – Order the Official Video of the Maui Visitors Bureau. Welcome to paradise, the way it was meant to be

639 Newfoundland and Labrador. *"A World of Difference"* – Discover one of the best-kept vacation secrets in North America. The air is clean, the people are friendly and the vistas magnificent.

604 Nova Scotia. *"Touring & Sightseeing in Nova Scotia"* – Welcome to Canada's Ocean Playground, the land of one hundred thousand welcomes and the festival capital of Canada. Nova Scotia is a seaside treasure of unique attractions and activities

747 Special Expeditions. *"Exploring Alaska's Coastal Wilderness"* – Experience the bold, wild beauty of Alaska's Inside Passage, including Glacier Bay. Discover the real Alaska aboard the expedition ships SEA BIRD and SEA LION.

636 Virginia Tourism Board. *"Discover Virginia"* – The year-round fun of Virginia's beaches, mountains, theme parks and history are highlighted in this video.

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gave themselves good-natured names like Button Busters, Zipper Rippers, Thick 'n Tired and Invisi-Belles. Members followed individual diets under the supervision of their doctors and met regularly to fuss over one another when they lost and shame one another when they gained. Backsliders were tried at a "Court of Weights and Measures" and deposited fines in piggy banks; the worst offender in one club was crowned "Queen Pig" and honored with a bouquet of weeds. By the late 1950s, the 60,000 members were losing an average of 15 pounds a year, but studies suggested that group dieters were not much more successful than solo, unsupervised reducers in keeping lost weight off.

Jean Nidetch, the Brooklyn-born talkaholic who founded Weight Watchers in 1963, was another overextended housewife who couldn't jettison pounds in solitude and, like Manz, she found Nirvana in a support group. Initially Weight Watchers differed from TOPS in that its members all followed the same diet, which involved no calorie-counting. Treating overeating almost as an addiction ("I used to hide chocolate cake in the laundry hamper," Nidetch confessed), it permitted unlimited gnoshing of certain vegetables while banning other foods altogether. Weight Watchers also differed from TOPS in that it was a profit-making business, and the proceeds from such products as frozen foods, desserts, cookbooks, scales and other goods were so rich that the company was gobbled up by the H. J. Heinz Company 16 years ago.

"The worst offender in one dieting club was crowned 'Queen Pig' and honored with a bouquet of weeds."

The somewhat startling truth about dieting is that, for all its up-and-down, cash-and-carry history, nothing much changes. Elizabeth Sharon Hayenga puts it this way in her doctoral dissertation titled "Dieting Through the Decades": "Virtually everything . . . cottage cheese diets, low-carbohydrate diets, diet pills, diet clubs, fasting, liquid diets—is reincarnated with a new title, author or brand name decade after decade. And each new incarnation produces new sales records."

In the 1960s and '70s, the boffo diets came attached to doctors' names but most owed their high-protein, low-carbohydrate regimen to William Banting, the London undertaker who had beaten that old devil corpulence with a low-carbohydrate diet in the 1860s. One after another the white-coated savants appeared in the center ring clutching nutritional salvation between hard covers—Dr. Herman Taller with *Calories Don't Count* in 1961, Dr. Irwin Stillman with *The Doctor's Quick Weight-Loss Diet* in 1967, Dr. Robert Atkins with *Dr. Atkins' Diet Revolution* in 1972, and Dr. Herman Tarnower with *The Complete Scarsdale Medical Diet* in 1978.

High-fat fraud, extra-light fine

The Romanian-born Taller, a gynecologist, contended that his book reflected "new knowledge" that polyunsaturated fats "softened" body fat, which then melted away quicker. He promoted a high-fat diet supplemented with vegetable oil capsules, but he veered into trouble when he mentioned a particular mail-order company as a source for the capsules. To federal prosecutors, this sounded like an advertisement and, when it turned out that the doctor owned an interest in the capsule company, they indicted him for mail fraud, conspiracy and mislabeling. Convicted of 12 counts in 1967, Taller was given a suspended sentence and fined $7,000, probably far short of a month's royalties for his book.

Stillman, who was a medical consultant at Coney Island Hospital, advocated a regimen similar to Taller's but lower in fat and cholesterol, in deference to evidence linking high cholesterol to heart disease. He urged lean meats, cottage cheese, hard-boiled eggs and eight ten-ounce glasses of water a day. Atkins' diet was another spin of the same tune, spiced with the iden-

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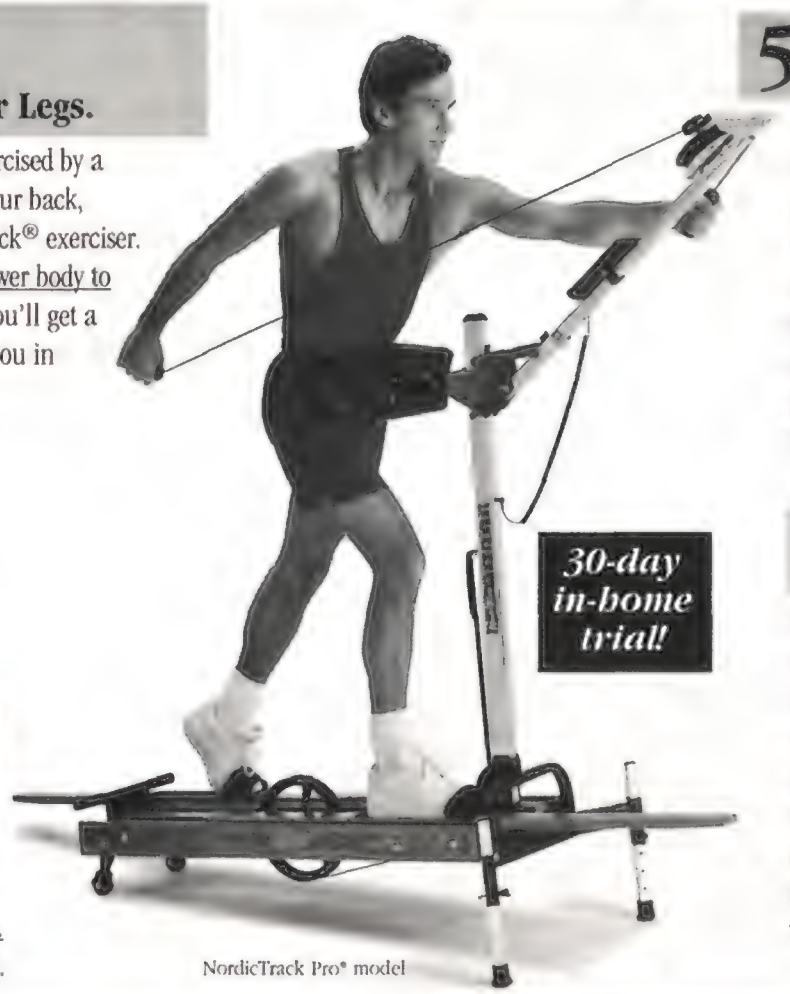

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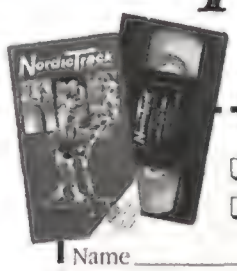

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tification of a previously (and still) unknown substance he called FMH (for "fat mobilizing hormone"), which he said "moves fat around the body." His tolerance of high-cholesterol bacon, cream and mayonnaise appalled the medical establishment—one critic called it "planned malnutrition"—but went over big with dieters.

Tarnower's Scarsdale diet marked a return to the traditional low-calorie, low-fat, low-carbohydrate discipline, with meals precisely spelled out in a 14-day plan. But Tarnower, too, was prone to gild biology a bit, declaring on no particular authority that the food combination in his plan stimulated a unique metabolic change that diminished fat. He had little time to enjoy his celebrity as a diet maven. He was shot to death by a jealous lover in 1980—but that's another story.

Not until the late 1980s did disaffection with the received wisdom that thinner was better begin to simmer beneath a surface still littered with diet books (300 were in print in 1984). Researchers commenced taking potshots at long-accepted theories (SMITHSONIAN, January 1986): heredity and metabolism might have more to do with rotundity, they suggested, than overeating; "yo-yo" dieting, the chronic swings endured by many dieters, could do more long-run harm than good; some scientists contended that each of us has a "set point" weight that the body finds ways to maintain, diet or no. Was dietmania, after booming for a century or so, on the wane? Probably not, but last year *Consumer Reports* concluded an article on weight-loss methods with these heretical words: "The majority of dieters would probably do better to forget about cutting calories, focus on exercising and eating a healthful diet, and let the pounds fall where they may."

Let them fall where they may? You mean all those diets, all that self-denial and self-discipline, all that ingenuity and imagination and hustle and con—all that was in vain? No more belts, rainbow pills or diet books? No more salons, clubs and obnoxious concoctions? That can't be right. Don't forget: I still hear somebody tapping away out there, cranking up yet another best-seller. This expert is laying the foundation of the diet revolution of all time. Really. It's the next big thing.

"Last year, *Consumer Reports* concluded an article with these heretical words: 'The majority of dieters would probably do better to forget about calories, and focus on exercising and eating a healthful diet.'"

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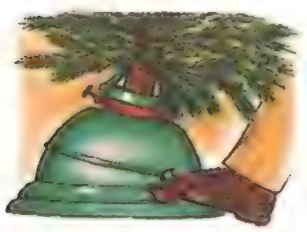

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By Timothy Foote

'No revolution ever produced a nobler or purer spirit'

The extraordinary life of Erskine Childers led him far from the sea he wrote about, and loved, to execution as a member of the IRA

Except for a faint, pencil-line smudge of sandspit islands off to the left, the boat is alone on an empty expanse of water. A sky exactly as gray as the sea has closed down around us. There is almost no horizon, and no conventional channel markers. Instead, we cling to a forlorn line of dark tree branches sprouting at intervals from the water.

What we're doing is known hereabouts as "sailing by the sticks," and any sailboat that strays more than a few yards from those sticks can be aground in an instant. As the tide falls, gray earth gradually shoulders the sea aside until, for miles, nothing can be seen except rapidly drying sands. By then your boat will be high and dry, usually heeled way over, but in any case stuck near a twisty trickle of water that was once the channel.

Any of the millions of readers who have fallen under the spell of a book called *The Riddle of the Sands* will instantly recognize this place as Erskine Childers country. The low sandspits to port are the German Frisians, barrier islands with spooky names like Borkum and Wangeroog. They guard some 50 miles of the German coast against batterings of the North Sea.

Childers was a Victorian Englishman who lived on into the brutalizing troubles of the 20th century. It is nearly a hundred years since he first explored these waters in a 30-foot sloop called *Vixen*. In the blustery fall of 1897 he took soundings all over this strange cruising ground, regularly running aground and kedging off as he meticulously made charts so detailed that when World War I broke out in 1914, they were gratefully put to use by the Royal Navy.

In due course *Vixen*'s cruise was transformed into *The Riddle of the Sands*, a seagoing novel of mystery and adventure—with the boat herself renamed *Dulcibella* (after Childers' favorite sister). It is a tale so real in nautical terms, and so compelling, that many a reader has schemed for years (as I did) for the chance to retrace the course of *Dulcibella*, sure that he will find things (as I did) virtually unchanged since Childers' time.

Riddle is that kind of book. To read it is to acquire a possession of the heart. Childers manages to combine a youthful, Conradian quest, a secret German plan to invade England, a British traitor in Teutonic clothing, an attempted murder by sail, a dash of sweet, silly romance, and a plunge, not only into the icy Baltic and the North Sea but into naval tactics and geopolitics (circa 1900) that would put Tom Clancy to shame. When you've finished, you want to shake the author by the hand. You know *Dulcibella* as if you'd sailed her, for the sturdy, double-ended lifeboat that she once was—in fact as in fiction—a boat like her owner, not much for show. The two main characters, Carruthers and Davies, are as real in memory as your favorite college roommates.

Childers has never been matched at conveying the spartan joys of cold weather sailing, the look and feel and sound of a small cruising boat at sea. "Cans clinked, cupboards rattled"; so begins a much-quoted passage describing *Dulcibella*'s cabin on a windy night. "Small things sidled out of dark hiding-places, and danced grotesque drunken figures on the floor, like goblins in a haunted glade. The mast whined dolorously . . . the centre-board hiccoughed and choked. Overhead another horde of demons seemed to have been let loose."

The story is a portrait of the evolving comradeship between two turn-of-the-century Englishmen. Carruthers, the narrator, is fashionable and worldly, a weanling diplomat out of the Foreign Office, initially appalled by the rigors of small-boat sailing. Davies, *Dulcibella*'s owner, is rougher-hewn but of finer material, a man without guile who lives for sailing. He also yearns to do something that matters with his life. Uncovering the German invasion plan and waking England up to prepare for war becomes "his chance."

Carruthers at first patronizes Davies but finally becomes deeply admiring of the man's sailing skill, his courage and his zeal. "Once set on the road he gripped his purpose with childlike faith and tenacity," Carruthers notes. "To hear him talk was to feel a current of clarifying air blustering into a close club-room, where men bandy ineffectual platitudes."

In 1910 Molly and Erskine Childers cruise in *Asgard*, the ketch they later used to run guns into Ireland.

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Aground in the Frisians, modern sloop awaits tide amid "stick" channel markers.

Riddle makes clear that, like Carruthers, Childers was at home in the Gilbert & Sullivanesque upper-class world: London clubs, house parties and August grouse shooting, as well as the rough, knuckle-skinning challenge of sailing single-handed in treacherous waters. It is also clear that Davies is the character the author liked best and perhaps invested with his own real or imagined qualities. For anyone who has read the book and knows the author's later life at all, it is difficult not to brood upon the two men as two aspects of Childers' character. Most writers write; they don't do much else. Childers was different. As romantic tragedy, his life would make a great Victorian novel. Or a brilliant Merchant-Ivory film.

He was born in 1870, a product of Haileybury, one of Britain's great public schools. Well before the turn of the century, with an honors degree from Cambridge, he became an anonymous civil servant, a clerk of the House of Commons. For years a photograph on the *Riddle* jacket showed him as a slight, worried-looking man in a high, starched collar and a clerkly black suit. He had a bit of a limp. He wore wire-

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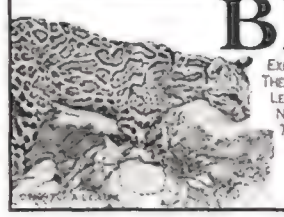

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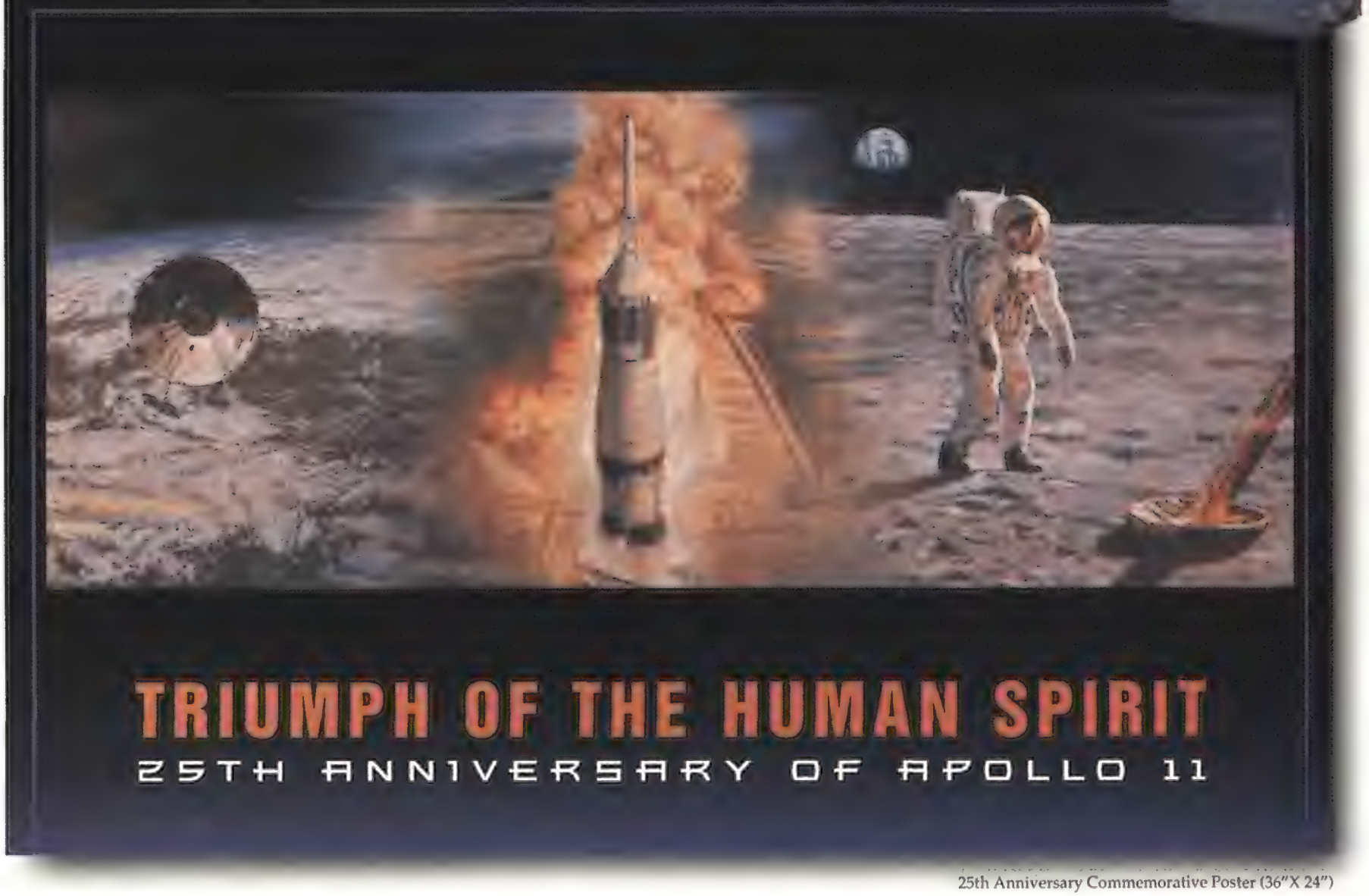

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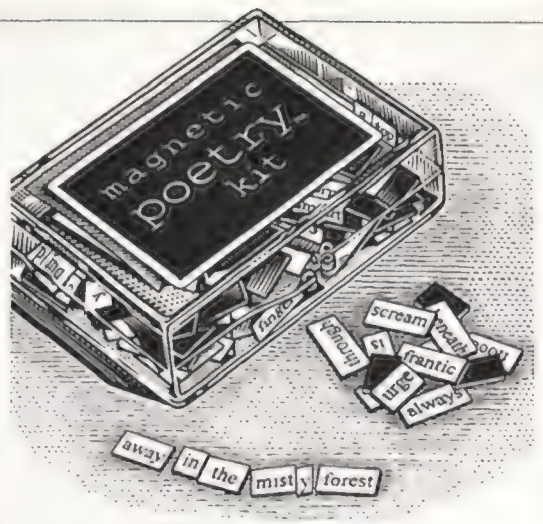

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rimmed spectacles. He was patriotic and pro-Empire. Even the chamber pots in his office were embossed with the royal coat of arms.

He once described *Riddle* as "a yachting story, with a purpose." Because at the time, there *was* a new German plan for the invasion of England. Childers' tale actually helped convince the Admiralty to take heed of Germany's great new navy and to create a North Sea base and a North Sea fleet to protect the coast of England from it. The book came out in 1903 and has rarely been out of print since. It made Childers famous not merely as a wizard sailor and storyteller, but as an expert on naval preparedness and what later became known as geopolitics.

Despite his eyeglasses and his game leg, early in 1900 Childers volunteered for the Boer War. Even in British Empire terms, the war was a questionable affair, but he saw it as a great adventure. "Don't you think it would be splendid to do something for one's country?" he wrote sister Dulcie; "I feel this is a chance of useful action."

In 1914, by then 44 years old with a wife and two children, Childers volunteered for aerial reconnaissance work with the Royal Navy—because he knew the sea approaches to Germany. Later he served in the Middle East. A smallish, careful man who managed to take more than his share of dangerous missions, he was often cited in dispatches and won the Distinguished Service Cross, one of Britain's highest honors.

Unimaginable then, that before he was through this very English figure, this proper patriot and civil servant, would be buying guns in Germany and smuggling them to enemies of England. That in England and Ireland he would eventually be suspect as a traitor or double agent; a time came when no less a personage than Winston Churchill would describe Childers as a "murderous renegade," driven by a "deadly and malignant hatred of the

Board Editor Timothy Foote once retraced Dulcibella's *route through the Frisians in a 30-foot sloop.*

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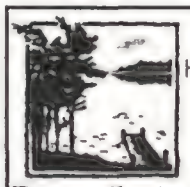

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land of his birth." Or that after Childers' death, John Buchan, Member of Parliament and peerless adventure writer, would declare, "No revolution ever produced a nobler or purer spirit."

Childers' tortuous progress would involve him in two events that have laid a mark on the 20th century. One was the decline of the British Empire. The other was the Irish Revolution, which helped set the modern world's style in terrorism—blackmail by bloodletting—as an accepted means of righting political wrongs.

The convulsion that marked the final separation of most of Ireland from Britain has been described as a "weird composite of idealism, neurosis, megalomania and criminality . . . precipitated by men who had not cleared the blood from their eyes." There is a grim and Gaelic irony in the fact that the only word in the list that fits Childers at all is "idealism," and that the description was given by Kevin O'Higgins, a Cabinet member of the new Irish Free State, the man who ordered Childers' execution.

Childers possessed to a marked degree the official Victorian virtues: high seriousness, sense of duty, belief in fair play. At least in manner and accent, he remained to the end ineradicably (and to many Irish, offensively) English. He was diffident with women but deeply romantic. He had a horror of emotional showiness and political flourishes of style. Abstemious and disciplined, indifferent to creature comforts, he had a lifelong addiction both to civility and gentlemanly adventure.

The fates, however, had dealt him a divided heart. He was orphaned at age 12. Thereafter, except for school, he spent his summers in Ireland at his aunt's estate, 2,000 acres in County Wicklow. Like most landed Anglo-Irish Protestants, Childers became a staunch Unionist. He believed that Ireland, like Wales and Scotland—and Ulster today—was part of the United Kingdom and should remain so.

During a good deal of the 700 years of English control, the story of Anglo-Ireland was a story of blindness and cruelty marked periodically by evictions and famines and mass emigration, by bloody uprisings bloodily put down. The people who worked the land were mostly poor and Catholic, legally hindered from acquiring property; the landowners—frequently absentee landlords at that—were often Anglo-Irish Protestants.

By the late 19th century, political reform, and land reform especially,

Map shows location of cruising ground in Frisian Islands that gave Childers material for *Riddle of the Sands*, as well as *Asgard*'s route during 1914 gunrunning.

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had set in. With Irish members elected to represent their country in the British Parliament acting as a voting block, home rule bills designed to give Ireland something like dominion status were fought over in the House of Commons. Each time a bill passed, it was cut down by the House of Lords. Still, after 1900, home rule seemed only a matter of time. But by then Irish nationalism and Irish anger burned hotter with each delay.

The pattern of escalating outrage and passionately non-negotiable demands that would soon characterize Irish revolutionary politics is familiar around the world today. Hundreds of Irishmen volunteered to fight against the British during the Boer War. Childers paid scant heed. But writing his sisters from South Africa, he expressed doubt that British forces could ever really put down the underdog Boers, an armed white population sure of its

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territorial rights and resolved to resist.

If he was slow to take up the Irish cause it was partly because for years his intellectual home remained military tactics. The first home of his heart was the sea. There, like Davies, he could escape the worldly world of feuding statesmen and obtuse generals, and complex parliamentary dealings that needed straightening out.

His other ruling passion was his magnetic American wife, Mary Alden Osgood. Slightly crippled and heroically used to pain, she was a strong-willed, breathtakingly idealistic Boston aristocrat whom he met by chance and swiftly married. As a New Englander, "Molly" Childers was anti-British and volubly anti-imperialist. She saw the Empire not as one of the useful organizing principles in a fragmented world but as an opponent of little nations and peoples, and the main roadblock on the way to inevitable progress. Gradually, Childers came to adopt that view.

After their marriage, he devoted any spare time and energy left over from sailing and his parliamentary job to writing highly praised books analyzing military affairs. In 1906 the Liberal Party swept into power, bringing with it social reforms and deep misgivings about the future of the Empire, and Childers grew discontented with his previous conservative politics.

Molly led the way. She studied eco-

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nomics and the suffrage movement and fashioned a new religion—a blend of all the world's religions—to replace Childers' Church of England faith, which had faded toward agnosticism. Only the fearless and the best, she counseled him, could hope to change the world, setting an example for smaller, feebler men. At one point, thanking her for "always holding up noble ideals," Childers remarked, "I have not grown as much as you this year. My fault and I must cure it."

With Molly's encouragement he quit his job in Parliament, turned against the Tory Party and by 1908 had begun to espouse home rule for Ireland. His fumbling efforts to win a seat in Parliament failed—he was too high-minded for politics.

Unionist friends were startled at the change in his positions. Some thought him besotted of his wife; a few began to think him rather a crackpot. In 1911 he published a remarkable book, *A Framework for Home Rule.* It exemplifies the kind of analytic clarity and fair-mindedness that almost to the end would mark his writing.

Fittingly, it was a sailboat that finally plunged Childers irrevocably into the maelstrom of Irish politics. After Childers' marriage to Molly, her father had given them a 49-foot ketch named *Asgard* after the citadel of Norse gods. Though crippled, Molly had gamely learned to sail and navigate. By 1914 (the House of Lords having at last been largely stripped of its veto powers) a home rule bill had finally become law. Passing it was one thing, implementing it another. The main problems then were the same ones that have so long caused Irish bloodshed: the ironbound refusal of largely Protestant Northern Ireland to give up its union with Britain, and the blind insistence of a few Irish nationalists on their right to entirely ignore that Protestant majority's views.

The Ulster counties armed themselves and began drilling. Abetted by the Conservative Party in England, they swore to fight any political compromise. When the Liberal government

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ordered British troops north to deal with this defiance, an astounding thing happened: the British officers refused to obey. They would resign their commissions, they said, rather than lead troops against Ulstermen who rejected any new British policy that might force Ulster to join the rest of Ireland.

Prime Minister Herbert Asquith backed off, merely placing a ban on importing weapons into Ireland, north or south. But when a private gunrunner brought 4,000 rifles and three million rounds of ammunition into the north, no action was taken. Radical leaders in the 26 counties of the south decided that they must have guns too. "Ireland unarmed will attain just as much freedom as it is convenient for England to give her," the poet Padraic Pearse wrote; "Ireland armed will attain as much freedom as she wants."

Childers was the man asked to smuggle in the guns. He was a celebrated sailor and navigator; his big white ketch was a familiar sight in English

On Dublin's Liffey Street workmen clean up part of wreckage from historic Easter 1916 uprising, when rebels declared Ireland an independent republic.

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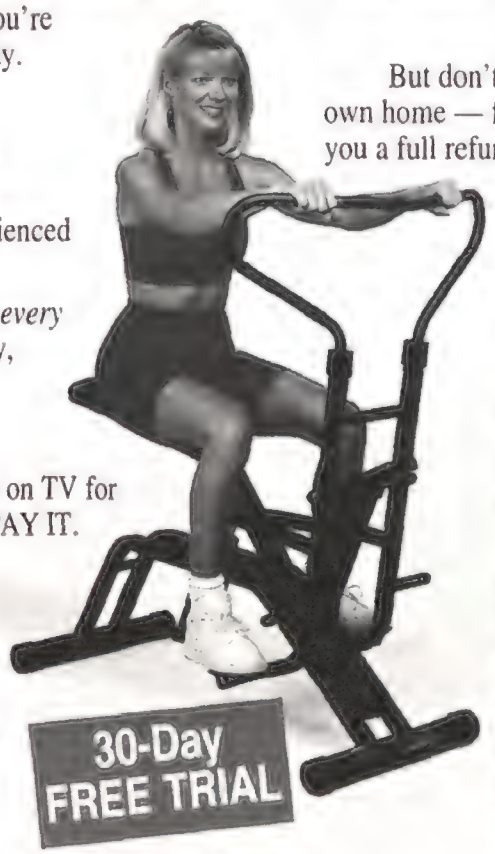

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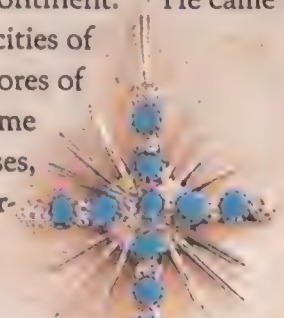

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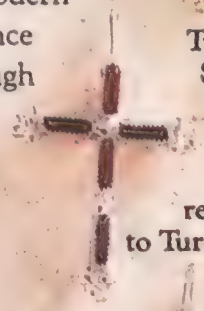

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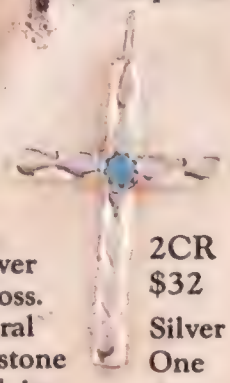

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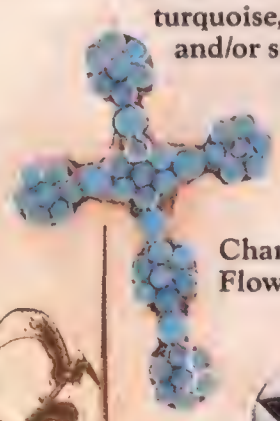

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and Irish waters; he was not identified with radical Irish nationalism. If he was a reasonable choice, the plan seemed harebrained; suitable at best for a John Buchan hero. But win or lose, it was certainly yachting "with a purpose." Childers' only stipulation: Molly must be part of the crew.

War was looming in June 1914 as Childers and Darrell Figgis, the Irish contact man, banged around in Germany amateurishly got up as Mexican arms dealers, and finally bought hundreds of bolt-action Mauser rifles and thousands of rounds of ammunition. It was arranged to get the guns aboard a German tug and rendezvous off the coast of Holland (see map, page 163). On July 10, 1914, *Asgard* set sail from Wales with a crew of six: two Irish fishermen as paid hands, Erskine, Molly, veteran sailor and Royal Flying Corps pilot Gordon Shephard, their young friend Mary Spring-Rice, a cousin of the British Ambassador in Washington.

Gales and headwinds held them back. Down around Lands End and along the south coast they went. On July 12, in the dark and fog, they could not find the tugboat. Molly finally spotted it, and *Asgard* drew alongside. Some 900 rifles and 25,000 rounds of

Michael Collins organized violent resistance to British rule in the 1920s.

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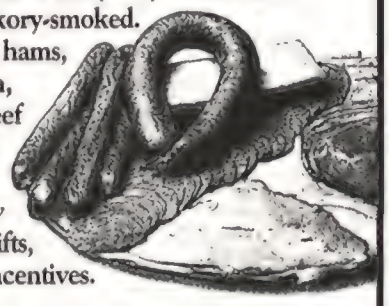

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ammunition were loaded into her. The heavily greased guns were handed down in bunches, then broken out so they could be stowed separately. Shephard sawed up most of *Asgard*'s bunks to make room. And still the guns came, piling up in the saloon and companionways. All six worked through the night as *Asgard* sank deeper and deeper with her load. At dawn they cast loose with a good reaching wind. It was July 13, 1914.

"We sleep, crawl over, sit on, eat on guns," Molly wrote a friend of the trip back. "They catch us in our knees; odd bolts and butts and barrels transfix us from time to time but we are all so happy and triumphant, so proud of ourselves that we swear we are comfortable." Twice they found themselves surrounded by British warships. Once a destroyer came in close, only to turn away at the last minute. They had, in fact, sailed through the whole of the British Navy's Grand Fleet, ordered out for maneuvers on the eve of war.

After sailing through the worst storm in the Irish Sea in 40 years, Childers made an exact landfall at Howth, north of Dublin, at 10 A.M. on July 26. A motorboat was supposed to meet them, but the owner was too frightened. Childers decided to sail in anyway. Molly's red jersey was the agreed upon signal to Irish volunteers assembled ashore to gather in the guns.

In retrospect the cruise sounds like an upper-class English lark. They did not believe they were committing treason, only breaking a law to see fair play done. If caught, they thought, they might at worst be fined. Naively they resolved as a matter of principle not to pay. Two days after the guns were smuggled in, Austria-Hungary declared war on Serbia. On August 4, Britain went to war because Germany had invaded Belgium.

On Easter Monday 1916, Childers' guns were used in the famous Dublin uprising, when a handful of Irish militants captured and briefly held the General Post Office, taking an oath to an imaginary independent Irish Re-

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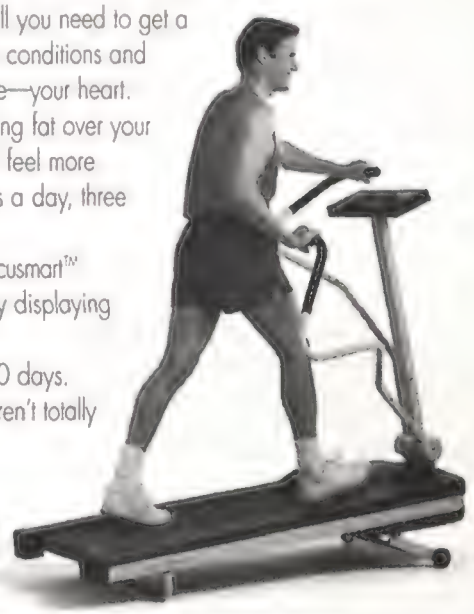

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Eamon De Valera, here raising money in America, later headed Irish Free State.

public. Today in Ireland the event looms large, like the Battle of Lexington and the Declaration of Independence all in one. In 1916 the uprising, which fruitlessly wrecked the center of Dublin and led to looting, was at first seen as feckless by most Irish. During the war, more than 200,000 Irishmen fought against Germany with the British Army in France. The British, who soon would be taking as many as 60,000 casualties a day on the Somme, felt betrayed by the Easter uprising.

Some 1,300 Irish suspects were swiftly deported to England without trial for detention or long prison sentences. The ringleaders were put to death, notable among them Labor leader James Connolly who, though his legs had been shattered by gunfire in the uprising, was strapped into a chair and shot along with the others. Overnight the dead became martyrs in the imperishable cause of Ireland's freedom.

Childers was far away. A few days after war broke out he had joined the British colors and was soon mentioned in dispatches as the lead observer in one of history's first air raids, an attack

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from a seaplane carrier, on the German zeppelin base in Cuxhaven. By 1916, still an aerial observer, he had moved to the Middle East; his last duty, equally dangerous, was aboard a flotilla of motor torpedo boats.

When Childers heard about the Easter uprising, he wrote his cousin Robert Barton, who would soon join the Irish cause and go to jail for it: "The typical rebel is often half-crazy and half-starved, a neurotic nourished on dreams." But, he added, "Peoples denied freedom will rebel, the responsibility for the tragic results resting on those who deny the freedom."

By 1918 when the Great War ended, Irish opinion was changed utterly. In the first postwar Irish election, 73 Irish deputies elected to the British Parliament were nationalist Sinn Fein candidates, hating England and dedicated

Tough British hitmen known as the Cairo Gang were organized to counter work of the Squad, a group created by Collins to kill off British agents.

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not to home rule but to independence. Once elected, they refused even to go to London. They would serve in Ireland, in a shadow parliament that they called the Dail Eireann. Thereafter they were part of an illegal underground government and cabinet, and began terrorist assaults on Anglo-Irish authority.

The third act of Erskine Childers' life took place in the Ireland of 1920 and 1921. By then it was a time of nightly killings by Irish nationalist gunmen and, in escalating reply, roundups, detentions, curfews and eventually martial law, tortures and executions by the Royal Irish Constabulary under British control. In Dublin the brilliant and redoubtable Michael Collins, the underground republic's minister of finance and director of intelligence, raised thousands of pounds to support Republican efforts, setting up clandestine bomb factories, negotiating with foreign arms dealers, organizing a band of youthful killers, "the Squad."

The result was something like a long-running gangland war. Early on "Bloody Sunday," November 21, 1920, for instance, the Squad tracked down 19 men suspected of being a British hit team and shot them, some still in their beds. That afternoon at a football match between Dublin and Tipperary, police and auxiliaries retaliated. When they were finished firing at the playing field and into the crowd, 14 people were dead and hundreds wounded.

Many members of the Royal Irish Constabulary were simply shot down. Others resigned in fear, or in sympathy with the nationalist cause. To maintain order, the British turned the worst work over to "irregulars," most notably the Black and Tans. Named for their mismatched uniforms (half Army khaki, half Constabulary black) the Black and Tans' main purpose was intimidation. Like the bad guys in American Westerns, they would roll into a town and shoot the place up. Often when a Sinn Fein sympathizer was elected mayor, he would be found shot—"by assailants unknown."

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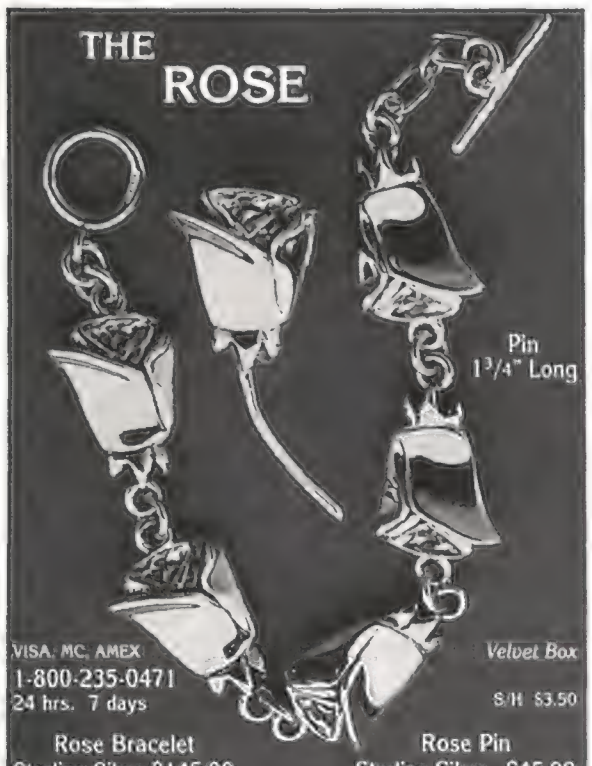

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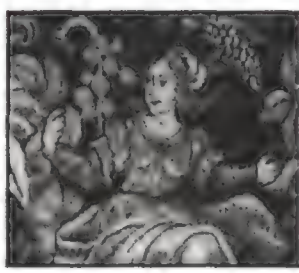

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On leave from the military in 1917 he had been named to sit in on an Anglo-Irish commission to work out compromises; neither the Ulster counties nor Sinn Fein would budge an inch. The next year, when World War I ended, he was almost 50, exhausted from years of combat and a bout of influenza that nearly killed him. He had a wife whom he loved deeply, two young sons and a career in England to return to. But friends remarked the changes in attitude that war and politics had worked in him. "No one dies for Home Rule," he wrote in 1919.

Prime Minister David Lloyd George threatened all-out war against Ireland.

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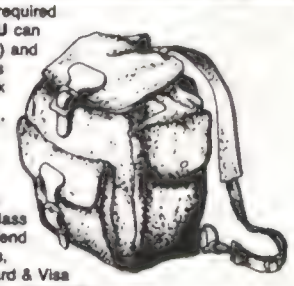

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"Freedom is the thing men die for." In March of that year he walked into the Sinn Fein headquarters in Dublin. "My name is Childers, Erskine Childers, " he said. "I have come over to give a hand any way I can help."

As editor of the underground *Irish Bulletin*, he brought in journalists from England. Reporting on British outrages, he drove home his point to English readers by adding the words: "All this [done] in your name." He took Irish citizenship, was elected to the Dail and appointed a full member of the Cabinet as minister of propaganda, working alongside the three makers of the Irish Revolution: Sinn Fein founder Arthur Griffith, Eamon De Valera, who had been raising money in America during most of the fighting, and Michael Collins, the man who more than any other created what became the Irish Free State.

Childers' skill at propaganda was never clearer than in an exchange with British Prime Minister David Lloyd George, who had declared that he would fight attempts at secession with all the "determination and resources" used by Lincoln against the South. "Lincoln's reputation is safe from your comparison," Childers shot back. "He fought to abolish slavery, you fight to maintain it."

The final act of Childers' tragedy began when, at last, a truce was agreed upon, and a series of Anglo-Irish talks were begun with a view to making some kind of treaty that both sides might accept. On October 11, 1921, he sailed to London as secretary to an Irish delegation that included Arthur Griffith and Michael Collins, sent to bargain for Ireland's future with David Lloyd George and Winston Churchill.

Childers' old friend historian Basil Williams was shocked to see him. Erskine was "thin and deadly pale," Williams wrote sadly. His old sense of humor and of proportion had vanished. "He would accept no compromise," Williams noted. "When it came to means of achieving his end, he had become almost ferocious and pitiless."

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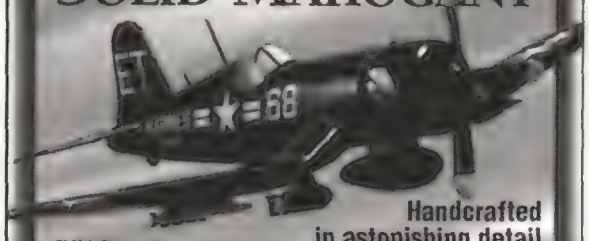

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Weeks passed. Concessions were made on both sides. The Irish finally won separation from England and a new name, the Irish Free State. They won their own flag, their own customs service and armed forces, and the withdrawal of all British soldiers from the 26 southern counties. But in the final version of the agreement there was still a watered-down oath to the British crown. And still no way to bring north and south together. A day came when Lloyd George held up two envelopes. One, he said, contained the announcement that both sides had agreed on the treaty text. The other was a notice to British forces in Ireland that negotiations had failed and a real, fighting war against the Republicans would begin.

Led by Collins and Griffith, the long-divided delegation finally signed. And in Ireland, at first, the public was wild with joy and relief. But there were those who insisted that Ireland could have been completely free if the delegates had refused to sign. One was Eamon De Valera. Another was Childers.

In the Irish debate over ratification, De Valera led the charge against the treaty, appealing to ultranationalists. Childers followed suit, predicting that

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the British could and would swiftly take back everything they had agreed to. The word "traitor" was freely cast about. But Griffith and, above all, Collins, pointed to all that had been gained. No longer part of England, with their own government and with the British Army gone, they declared, Ireland had won enough freedom to eventually achieve total independence.

When the country voted, De Valera lost, Collins and the treaty won. Then De Valera, expressing a standard extremist view (that the "majority has no right to do wrong"), walked out of the Dail, taking his followers with him. Childers was among them. Even as British soldiers began leaving their barracks and shipping home, IRA forces began a civil war—attacking those same barracks and burning the houses and valuables of treaty proponents.

All through the summer of 1922 Childers turned out propaganda for this tragic folly. But because he was an expert on military affairs—and widely perceived as English and sometimes even as an English agent—he began to be blamed in public as the mastermind behind bloody, erratic hit-and-run attacks by the IRA. He became a "Wanted" criminal of the Free State government. His danger increased in August of 1922 when Michael Collins, the target of assassination plots by the men who followed De Valera, was killed in an ambush. Collins was a friend of the Childers'; he had given Erskine a small, pearl-handled .22 revolver that Childers now illegally carried.

Novelist Frank O'Connor, then an 18-year-old with literary ambitions, served briefly with Childers near Cork in the late summer of 1922. O'Connor's descriptions of him are both funny and heartbreaking. "He came down the stairs of the Victoria Hotel limping and frowning," O'Connor writes, "a small, slight gray-haired man in tweeds, like a parson or a public school teacher, conscientious to a fault and overburdened with minor cares. The brows were puckered in a triangle of obsessive thought."

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The fighting by then was sporadic, ill-organized and meaningless. Childers' little handpress got dropped into a bog by mistake. Still, he took his mission seriously. He had a bad cough, O'Connor remembered. At night, so as not to wake others, Childers would go out and sit in the cold hall, stifling his coughs and reading boyhood books like *The Deerslayer* and Alexandre Dumas's *Twenty Years After.*

Near the end, De Valera got a message to Childers that he was needed in Dublin. With David Robinson, who had lost an eye in World War I as a captain in the British Army, he made his way across half of Ireland, traveling mostly at night and dodging Free State soldiers. On the evening of November 10, 1922, Childers and Robinson reached Glendalough House, the estate where Childers had grown up. Exhausted, refusing a cot in a secret room, Childers trudged upstairs and fell into his own boyhood bed. Someone informed on him. After midnight, Free State soldiers arrived. Still drugged with sleep, he staggered out of his room. With their rifles pointed at him, he tried to raise his little revolver.

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In months before execution, duties as IRA propagandist overburdened Childers.

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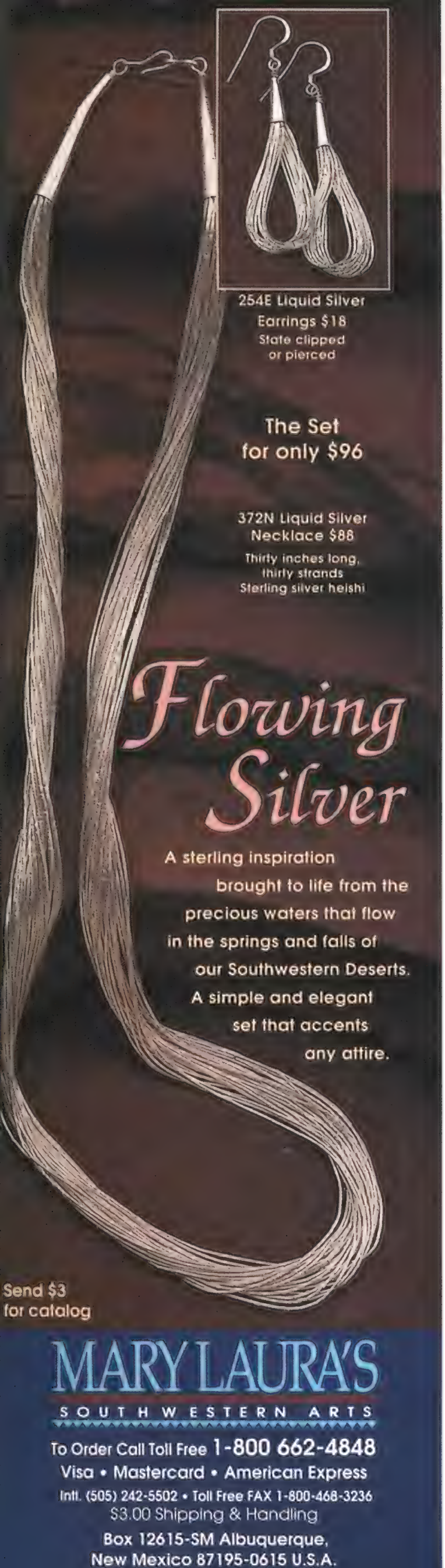

of the revolver, swiftly tried by a military court and sentenced to execution by firing squad—along with four other anti-Free State fighters also caught with weapons. Protests poured in from all over Ireland, England and the United States. They did no good. The Free State government was in a hurry to demonstrate its seriousness and to close down the civil war.

Childers wrote the courts a long, clear explanation of the moral logic that had led him to the position he was in. He wrote Molly, reassuring her that he loved her and bore no enmity to anyone: "I die loving England and passionately praying that she may change completely and finally towards Ireland." He was allowed to see his 16-year-old son, Erskine Hamilton Childers, and asked the boy to promise to "shake hands with each person who figured in my death." On the final morning he wrote Molly again. "It is 6 a.m. You will be pleased to see how imperturbable I have been this night and am. It all seems perfectly simple and inevitable, like lying down after a long day's work." In the courtyard of Beggar's Bush Barracks he shook hands with each rifleman. After the nervous firing squad had taken their positions he called out to them, "Come closer boys. It will be easier for you."

Under the headline "SOLDIER, WRITER AND TRAITOR" one English paper dismissed Childers as "only one of thousands of victims . . . sacrificed in order to prove to the Irish that they are unfit to govern themselves." Others were either shocked, full of praise or inclined to puzzle over the riddle of Childers' life as "one of the most mysterious figures in Irish political history." Molly made a brief, curious statement to the press: "His sacrifice is as much a gift to me as it is to his comrades who serve Ireland's cause." A few days later, when Irish playwright Lady Gregory came to offer condolences to Molly and her sons, one of the boys cut her off with the chilling words: "It does not matter. The Irish Republic has triumphed."

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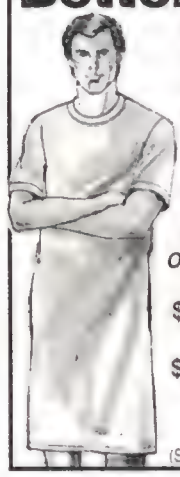
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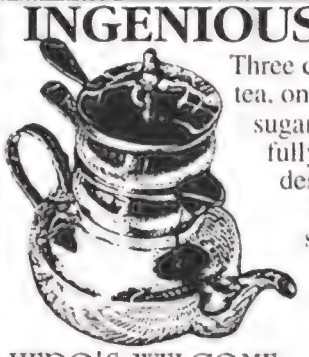
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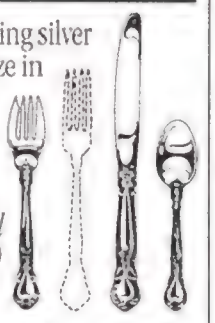
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Childers' elder son, Erskine, became the president of Ireland in 1973 at age 68.

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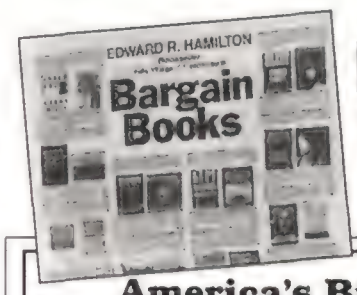
As historian Burke Wilkinson has pointed out, there was no real riddle to Childers' life. In *The Zeal of the Convert*, the best book on Childers yet written, Wilkinson notes: "He was neither a devious nor a complicated man. The legends that have swirled about his name arose because his simplicity, his directness, taxed belief." The only real mystery is how a man so skilled at political analysis and experienced in parliamentary compromise, could have helped to devastate Ireland and abet Irishmen in killing other Irishmen when so much had been gained, when so much hope existed for the Irish Free State.

Collins was proved right, and De Valera and Childers were proved wrong—about the oath, about the treaty and what would become of Ireland under it. The British did not come back; the Free State thrived. De Valera arguably had political ambition to consider. The treaty had been signed against his wishes; he had been eclipsed as Ireland's real leader by the charismatic Collins. After Collins' death, the way lay open for him again. Eventually he took the oath, over



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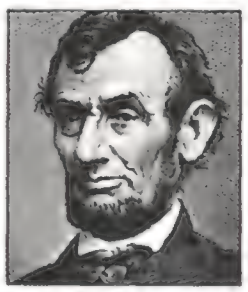

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which so much blood and rhetoric had been spilled, and doing so he referred to it as "an empty formula." Then, as prime minister of the Irish Free State, he proceeded, as Collins had planned to do, to use the freedoms of the new status to create an entirely free and independent Ireland.

Childers himself had no trace of personal ambition. At the end he was worn out, overwrought—and wrong. Yet in the manner in which he took leave of life he did as much for the living as high courage and ingrained civility could do.

Molly lived on for 40 years, the keeper of the flame. In 1973 their son Erskine Hamilton Childers was elected president of Ireland. Childers' ketch *Asgard* became a national monument and now sits in a courtyard at Dublin's Kilmainham prison.

During the months of the "troubles" and the civil war, there was neither the joyful energy nor the opportunity for sailing. One likes to think that if Childers could have gone out in *Asgard*, he might have eased up enough to see the great victory that the treaty was for Ireland, to know that the time had come to turn from sacred oaths and bloodletting to politics as the art of the possible—as the IRA has lately talked of doing in Northern Ireland.

When I sailed to the island of Norderney, where, in Childers' *Riddle*, Carruthers and Davies finally confront their enemies, I kept leafing back through the book. And was brought up sharp by a description of Davies, written in 1903. He had become, Carruthers says, "a zealot smarting under a personal discontent, athirst for a means, however tortuous, of contributing his effort to the great cause."

One of Davies' crotchets—along with a fondness for tossing outworn gear overboard—is his feeling that he and *Dulcibella* are blessedly safe and free only at sea. A moment comes, though, when he and Carruthers have to go ashore. Their whole mission seems in danger of collapse. And Davies wails, "It comes of landing—*ever*."

Childers (standing, with file) disapproved when Michael Collins (seated, center) signed fateful 1921 treaty that produced the Irish Free State; at far left is Arthur Griffith. Disagreement over the treaty led to an IRA war on the Free State.

Additional Reading

Around the Mall (p. 20)

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Killer whales (p. 46)

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Impressionism (p. 78)

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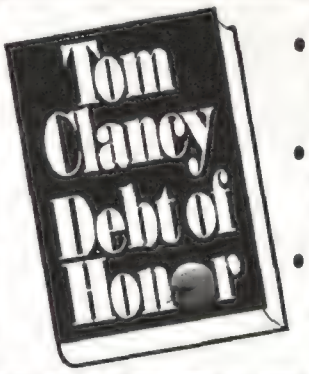

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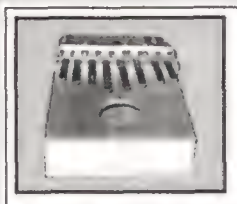

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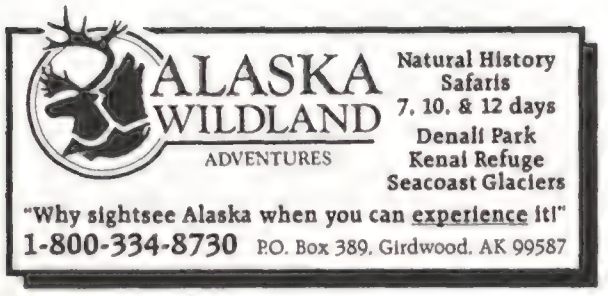
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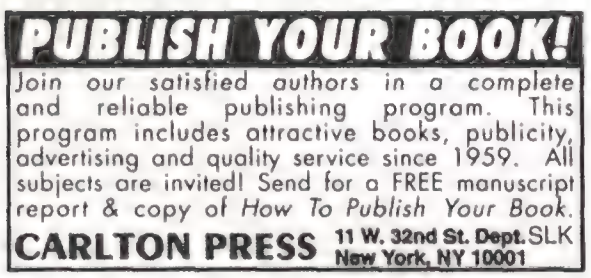
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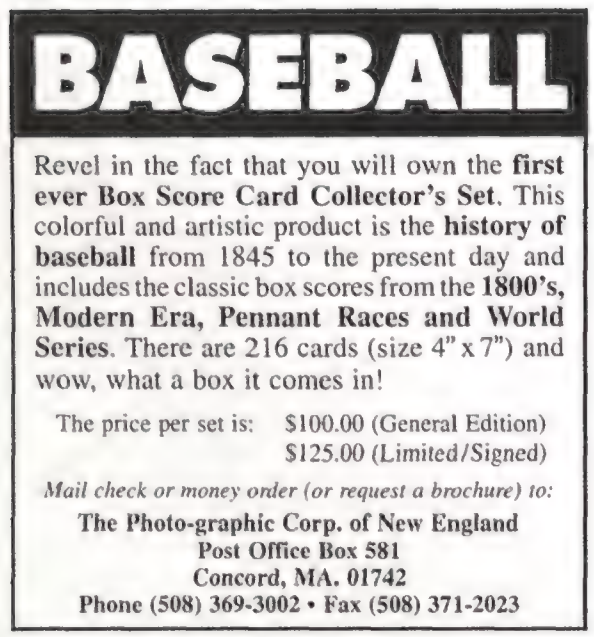
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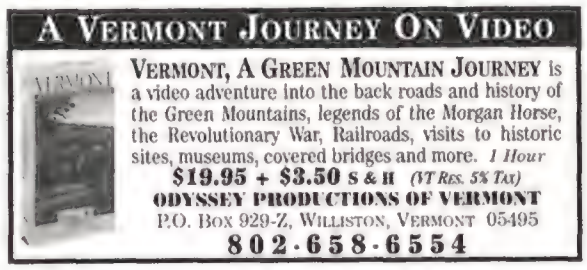
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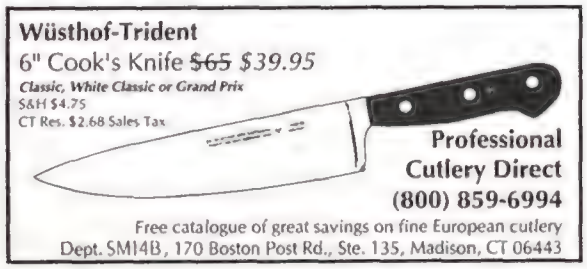
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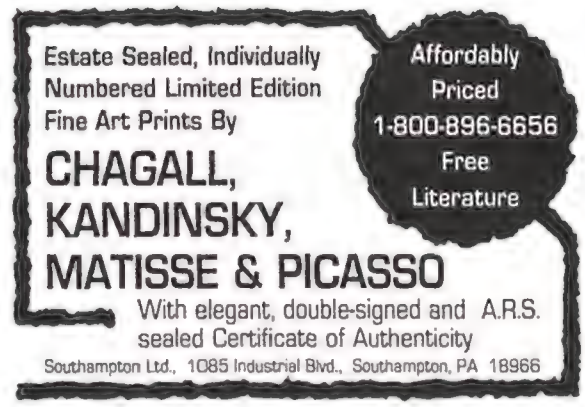
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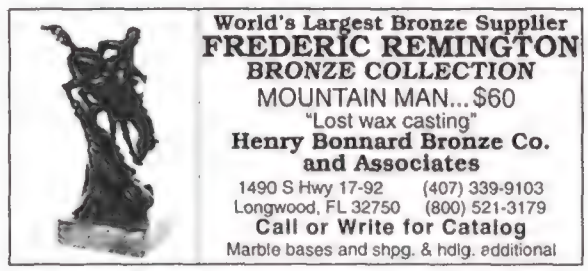
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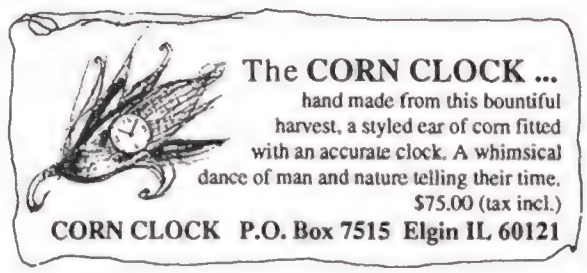
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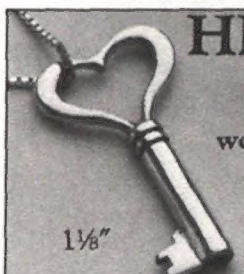

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By Joseph Kastner

I must have achieved something impressive to deserve preapproval

When I look these days at the political polls, on television or in the papers, that give approval ratings to the President or my Senators, I feel very smug. Clinton and Congress have to fight uphill all the way to keep up their ratings.

I don't.

I don't need polls to give me approval—I don't even need approval.

I have been—and on a national scale, mind you—preapproved.

Today a credit card in Delaware has written to say it has "preapproved" me. The other day it was a mammoth bank in Manhattan, and in the past few weeks both an automobile club in Illinois and a life insurance company in Iowa have given me their wholehearted preapproval. They even announce it right on the front of the envelope—"YOU HAVE BEEN PREAPPROVED." This entitles me to accept their "low" or "high" interest rates, depending on whether I am spending or saving, or their help in case of trouble on the road (my auto) or at the end of the road (me).

It was as heartening as it was unexpected. And it was no idle talk. The Delaware credit card puts its money where its mouth is: "Your preapproval credit: $6,000." The president of the company, a Mr. Butler, whom I don't remember meeting but who seems to know me pretty well anyway, tops the approval off with: "You deserve it."

Although I was impressed by the easy 6,000 bucks, I was more touched by Mr. Butler's apparent understanding of my worth. Whatever preapproval might do for my cash flow, it was having a bracing effect on my self-confidence. I found myself free of those tremors of doubt that make my ego a little shaky. My moral fiber had been losing its slackness of late; now I could actually feel it regaining its tensile strength.

I began to wonder just what it was in my work or my persona that could have brought the unsought honor. I have led a reasonably exemplary life. On an exemplary rating of 1 to 10 I would give myself an 8.3 or at least a 7.9, putting as much weight on what I didn't do as on what I have done. My fiscal behavior (two IRS audits) has been nothing less than dutiful. My life in crime (speeding and parking tickets) has been banal. My professional career has been respectable. As a writer, I rarely disregarded deadlines, and my aptitude at alliteration has been admired. When I turned editor, I tried hard not to fall victim to the hubris that threatens anyone who gets paid well for sitting in judgment on the work that others do.

Other questions arose. Now, so universally preapproved, would I begin to settle instead of continuing to strive? Was I ready to furl my banner with its motto *Excelsior!* and hoist one proclaiming *Preapproval!*?

Looking for clues to myself, I sorted through the index of my life, but the entries did not add up to anything. I realized I would not find an answer in a catalog. I needed some key happening in my life, maybe even an epiphany, that would explain how I came to qualify for preapproval.

Late one evening, watching a rerun of *Citizen Kane*, I was suddenly taken back to my brief but noble life as an Indian chieftain in Brooklyn and to a forgotten childhood toy. On my sixth birthday, my parents, who were Austrian and harbored romantic European attitudes toward American Indians, gave me a warrior's outfit: a feathered headdress that draped down to my ankles, and a bow and some arrows. When I went out into the street in my regalia, I got an enthusiastic welcome from the boys on the block, which surprised me until I realized what was up.

In those irresponsible days, we played endless games of cowboys and Indians. Everybody wanted to be a cowboy; nobody wanted to be an Indian. Not because we had anything against Indians, but they always had to lose the battles. So we all took unwilling turns at playing the Indian brave. Now here I was, volunteering to be the official Indian.

Day after day, I faced posses of cowboys, fighting off their cap pistols with my bow. It was strung loosely, though, to suit a 6-year-old's muscles, and no matter how far I pulled back or how straight I aimed, the arrow flew about three feet and then plopped uselessly to the pavement in front of me.

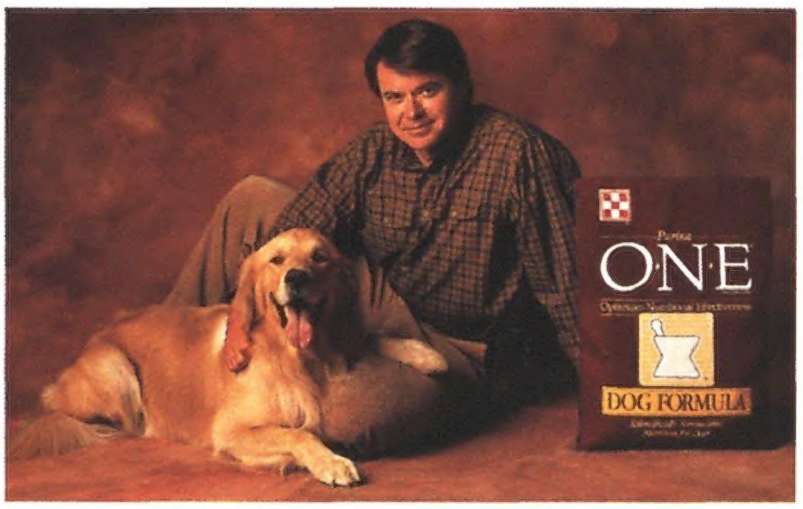
Brandishing my ineffectual weapon, I retreated behind delivery wagons or skulked behind stoops. Finally, clutching my bow, I sank to the sidewalk, bouncing my hands off my lips in a last defiant war whoop.

I did not see myself then, of course, as persecuted. I was simply the victim of history, accepting my inevitable fate. Still there were times, during those daily deaths, when I wished my parents had been a little more assimilated about American heroes and prejudices, or at least had given me a stronger bow. But I had taken on my assigned role and I never shirked it.

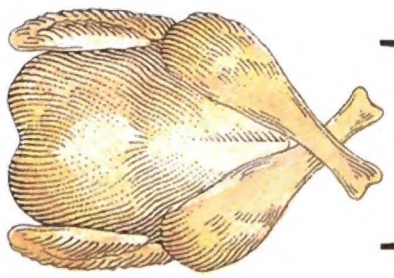
I suppose it was a demonstration of grace under pressure, a building block for future preapproval. Decades later I see it all clearly—my behavior and my bow—as the defining metaphor of a deserving life, my own Rosebud.

"He Can Sit,

Roll Over, Beg, Play Dead and Even Sing.



But He Couldn't Read An Ingredient Label



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—Robert Urich

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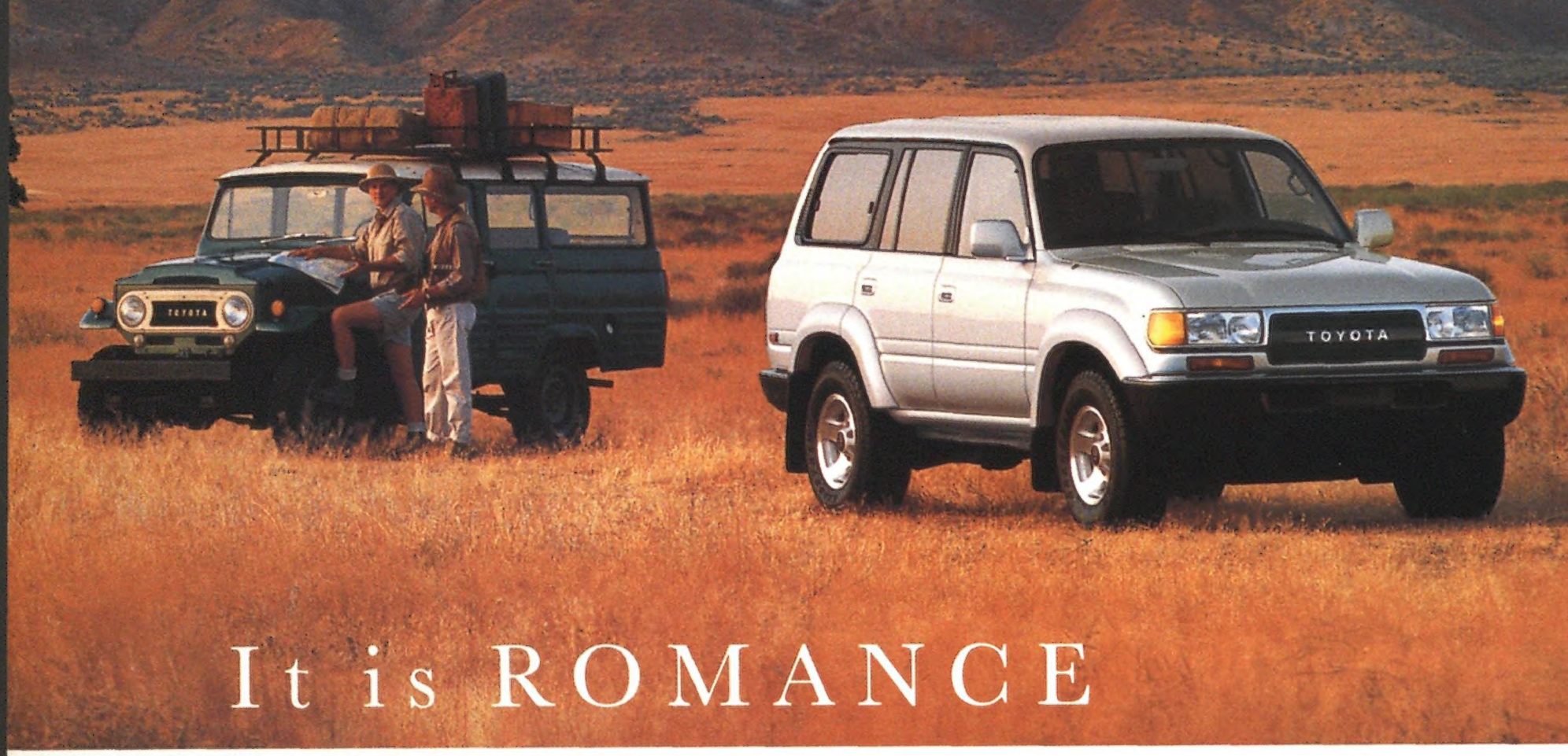

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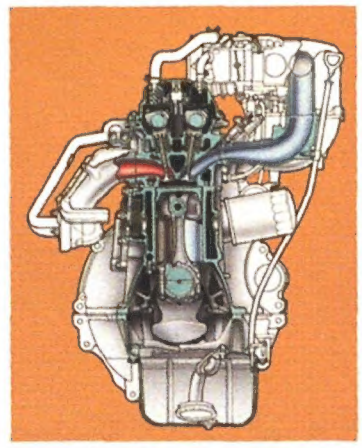

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